December 2021 Volume 146 Number 1108

The Naturalist

Yorkshire Naturalists' Union

Journal of Natural History for the North of England

The Naturalist

Vol. 146 No. 1108 December 2021

Contents

	Page
Barry Warrington - President of the YNU 2021-2022	161
'Foulmart' to 'Polecat': the gentrification of a name Colin A. Howes	163
Habitat analysis of 35 Yorkshire sites according to numbers of wasp and bee species Michael E. Archer	171
The St Nicks Slug Crib Sam J. Buckton and Jane Thomas	182
YNU Bryological Section Report for 2020 T.L. Blockeel	195
Historical note: more on the Water Voles of Read's Island* Richard Shillaker	199
Henry Hewetson (1826–1909), a forgotten Yorkshire botanist Richard Middleton	207
YNU Excursion Reports 2021	
Flamborough Head (VC61)	215
Duncombe Park (VC62)	218
Dearne Valley, Barnsley (VC63)	223
Askham Bog (VC64)	226
Howgill Fells, Cautley Holme Beck (VC65)	235
Pip Seccombe (1939-2021)	240
YNU Calendar 2022	240

An asterisk* indicates a peer-reviewed paper

Front cover: Dryad's Saddle fungus *Polyporus squamosus* at an early stage of its fruiting body growth, found at Duncombe Park on the VC62 Excursion (See p218). *Photo: Terry Whitaker.*

Back cover: YNU members 'enjoying' wet weather in the Dearne Valley during the V63 Excursion (See p223). *Photo: Joyce Simmons.*

The Naturalist

Barry Warrington - President of the YNU 2021-2022

I am still shocked to have been offered the Presidency of the Yorkshire Naturalists' Union. To have my name alongside some of the greatest names in Yorkshire (and British) natural history is a huge honour and although I'm sure the Trustees had their reasons for nominating and voting me in, I feel there are many other Yorkshire naturalists who are more worthy to have this privilege bestowed upon them than me. Nevertheless, thank you.

When I was asked to write something introducing myself as President, a sense of dread came over me as I'm not at all comfortable being 'in the limelight'. Very few people within the YNU know much about me but some may be familiar with my name owing to having been the YNU Treasurer and a Trustee for five years (2014-2019), or from short articles within *The Naturalist* and other natural history journals. Unless readers have an interest in the dipterous family Agromyzidae (leaf-miner flies), it is unlikely anyone will be aware of my research, publications and website, or the national recording scheme I run, covering this niche family.

I can clearly recall when my interest in the natural world was sparked; having lived in the streets of inner Hull up until the age of nine, in c.1988, we moved to the outskirts of the city and were lucky enough to have so many green fields just a few minutes' walk away. One day, the family who lived opposite asked if I wanted to join them taking their dog for a walk. We walked to the nearby fields and upon climbing the gate, I was faced with what seemed like endless meadows, filled with flitting butterflies, chirping grasshoppers, lapwings dancing in the sky and grass which tickled my chin. I've being fascinated with the natural world ever since that day. Sadly, there are now fewer butterflies to be seen, the chirping of grasshoppers isn't as intense and the lapwings have disappeared; a scene which is unfortunately mirrored up and down the country these days.

During the past thirty years, I have focussed my attention on various taxa, including birds, butterflies, crickets, dragonflies, flatworms, fungi, galls, leafhoppers, lichens, mosses, moths, shield-bugs and much more! However, the leaf-mining family of flies, Agromyzidae, are my passion and it is very humbling when highly respected dipterists within the YNU tell me I'm making an enormous contribution to their study.

I would like to say a word or two regarding the future of natural history in Yorkshire and further afield. Although we all have different interests, from bats to birds, snails to snakes, we all have one thing in common and that is a passion for the natural world. Although the current biodiversity crisis we find ourselves in may seem like a battle we aren't winning, the passion we all have can achieve important little 'victories', be that from creating wildlife-friendly gardens, reducing our carbon footprint, urging local authorities or land owners to amend their policies for the benefit of biodiversity or to enthusing the next generation of naturalists. I know from personal experience that being so passionate about Agromyzidae has directly resulted in more people taking an interest in the family, and local authorities and land owners have changed their habitat management regimes after listening to my concerns and proposals for a site.

We are lucky to have many excellent young naturalists in Yorkshire, who I'm sure will go on to achieve great things in their relevant field and one day, who knows, may become President of the YNU. It is vital we do our best to encourage and offer our support to the next generation and anyone else who shows an interest in natural history.

The YNU is one big family, brimming with friendly, highly knowledgeable section heads and members. To be installed as President for 2021/2022 is a great honour and I dearly hope that my past, present and future contributions to natural history go some way to justifying the decision.

‘Foulmart’ to ‘Polecat’: the gentrification of a name

Colin A. Howes 7 Aldcliffe Crescent, Balby, Doncaster DN4 9DF
colinhowes@blueyonder.co.uk

Introduction

Vermin bounty payments recorded in the annual financial accounts of churchwardens’ and other parish/township officials can provide a rich source of localised and dated vertebrate records from the late 16th to the early 19th centuries. However, in order to confirm which taxa were being referred to it has been necessary to translate the miscellany of vernacular names used for species of ‘vermin’.

Since this nomenclature was largely the product of generations of acquisition through word of mouth, species names varied geographically and through time. Churchwardens were elected annually and, depending on the size of the administrative area, there could be several wardens operating concurrently, therefore the handwriting styles and consistencies of spellings could vary widely according to who was wielding the quill.

Foulmart to Polecat

Of particular interest in monitoring etymological trends were variants of the terms used to denote the Polecat *Mustela putorius.* Through the Yorkshire region from the 17th Century the preferred vernacular names have oscillated between two pairs of distinct etymological bases ‘*Foul mart’* and ‘*Pole cat’*. The generally earlier form ‘foul mart’ is derived from the Old English *ful* meaning foul, referring to the characteristic pungent musky smell of this mustelid, rendering it relatively undesirable as a source of fur for garments. The term ‘mart’ places this animal with the marten-like members of the Mustelidae. The term foul mart as applied to *M. putorius* separates it from the relatively scentless ‘sweet mart’ or Pine Marten *Martes martes,* the pelts of which were highly valued in the fur trade.

In hand-written form it was generally expressed *foumart* or *fumerd*. However, from generations of parish officials from its earliest traced usage in 1619 in Doncaster to its last in 1837 in Whiston, the name was transmuted into numerous permutations. Within the 94 sets of Yorkshire parish accounts examined for this project (Howes 2009) the first element ‘*foul*’ has also been written as: *ffoo; ffow; ffu; fful; fol; foo; fool; for; fou; fow; fowl; fu; ful; full; fulli; fylo* and *phylo*. The terminal element ‘*mart*’ has also been written as: *mad; mar; mard; marrt; mate; mbort; md; melt; mer; met; mett; mherd; mit; mmard; mmerd; mont; mort; mot; mrd; mrod; mt* and *murth*.

Frequency of use

In the Yorkshire parish accounts the *Foul Mart* and its numerous versions was recorded 5,409 times in the following 49 parishes: Arksey with Bentley (447); Barnburgh (97); Bawtry (58); Bedale (89); Beverley (4); Bolton Percy (7); Bolton on Dearne (1); Bradford (6); Brompton by Sawdon (148); Cottingham (1,259); Doncaster (1); East Ardsley (2); Ecclesfield (46); Elloughton & Brough (65); Fishlake (14); Great Ayton (225); Harthill (52); Helmsley (1); Hickleton (5); Hilton (18); Hooton Pagnall (1); Hooton Roberts (15); Hudswell (1); Kildwick (219); Langtoft (7); Luddenden (6); Masham (599); North Ferriby (98); Patrington (88); Peniston (43); Rawcliffe

(98); Routh (1); Scarborough (37); Skipton (1); Snaith (4); South Cave (52); Stainton in Cleveland (311); Tankersley (14); Terrington (49); Thorpe Salvin (50); Thursonland (285), Todwick (14); Wadworth (158); Wakefield (23); Wath-upon-Dearne (10); Whiston (360); Wold Newton (15); Worsbrough (274) and Yeadon (1).

In the parish accounts of a sample of Nottinghamshire riverside parishes the term *fumard* and its numerous versions was encountered on a total of 318 occasions in the following parishes: Blyth (48); Clayworth (172); Elkersley (32); Gamston (7); Gringley on the Hill (1) and Ollerton (5) (Howes, 1989).

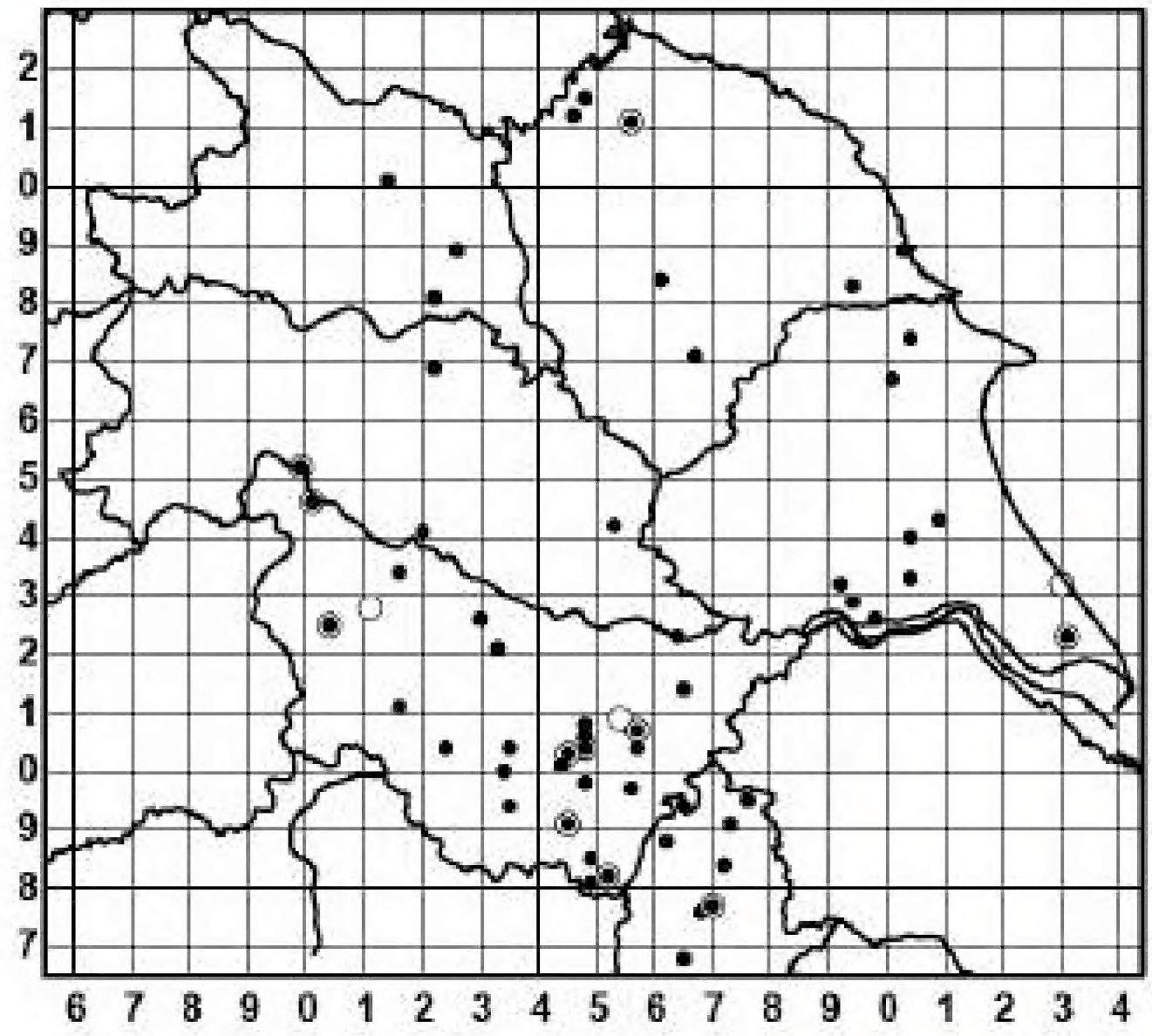

Figure 1: Yorkshire and North Nottinghamshire Parishes where the vernacular forms *Foumart* (black dot) and *Polecat* (open circle) or both (black dot in open circle) were used to represent *M. putorius* in accounts of vermin bounty payments.

Geographically these ranged from Harthill and Thorp Salvin (South Yorkshire) and Ollerton (Nottinghamshire) in the south, Skipton and Kildwick in the west, Patrington in the east and Stainton in Cleveland in the North. Further north 18th Century vermin bounty payments were made for *foulmarts* in the parishes of Witton Gilbert and Stanhope in 1733 and Durham City in 1743 (Coult & O'Hara, 2012); also in the Northumberland parish of Corbridge-on-Tyne bounties were paid for *fulmarts* in 1707 and 1743 (Nelson, 1881).

In the fur markets of Scotland in 1424 an export tax of 8d was raised on each batch of ten

fulmart skins and in the 19th Century significant numbers of *fomarts* skins were sold at the annual Dumfries Fur Fair, Mr R. Service recording 400 in 1829, 600 in 1831 and in 1832 they were sufficiently numerous to be described as 'a drug on the market'. Numbers declined in subsequent years with 240 in 1856, 168 in 1860, 12 in 1866 but from 1869 to 1874 when the fair ceased there were no *foumart* skins on offer (Ritchie, 1920).

Dialect evidence also confirms a northern orientation of the use of the *foulmart* form with versions used in Lancashire (Baldwin, 1878, Cobham, n.d.), Durham (Dinsdale, 1894) and, demonstrating its Scottish use, in central Ayrshire the term was coined by Robert Burns in the poem *A Waukrife Minnie* (Wilson, 1923).

"O weary fa' the waukrife cock,
And the foumart lay his crawin!
He wauken'd the auld wife frae her sleep,
A wee blink or the dawin."

The cultural antiquity of the term in north Britain is further confirmed with its use in the Northumbrian hill place names Foulmart Knowle (NU1124) and Foumart Law (NZ 0981) (Coult & O'Hara, 2012).

Printed examples of the *foulmart* vernacular form are exceedingly rare with most of the present examples deriving from archived manuscripts or subsequent discussions of archival, dialect or place-name research. The earliest English manuscript example encountered to date is the Porkington Manuscript of 1460 (Howes, 2009) where the *folmard* is listed amongst the *'bestes of ye stinking fure'*.

Polecat as the standard name

The *Polecat* name evidently originated from an equally prejudicial allusion, W.W.Skeat in the *Oxford English Dictionary* (1989) suggesting the etymological root may derive from the Old French *poule* or chicken, being a reference to its pest status in predating poultry. However another possibility is for the first element to refer to the Old English *poll* referring to the head, a reference to the strongly contrasting 'bandit mask' patterning on the Polecat's head, in the sense of the Redpoll *Fringilla cannabina* referring to the patch of red feathers on its forehead.

The term polecat was only used on 177 occasions in Yorkshire parishes representing a mere 3.3% of allusions to *M. putorius* bounties. It appeared in the accounts of only 13 widely scattered parishes (see figure 1, p166) where its use appeared gradually in the late 17th Century, its frequency becoming dominant by the 1830s (see Table 1). In the sample of 6 Nottinghamshire parishes the term *polecat* was encountered only once, this for 1779 in the parish of Gamston (see Figure 1). Spellings and form varied slightly, including *pole; poo; pool; powl* and *cat* and *catt.* Table 1 arranges occurrences in date order to illustrate temporal trends in its use.

Table 1. Yorkshire parishes in which the vernacular term 'Polecat' was used in churchwardens' accounts. Parishes arranged in date order, numbers of bounties and dates of local Enclosure Awards listed to compare with dated usage of the term *polecat.*

Parish	Date	Number of *Polecat* bounties	Date of Enclosure award
Kildwick	1672	2	1774
Northowram	1688	1	1780
Thorpe Salvin	1707-1737	38	
Bolton on Dearne	1738	1	1761
Arksey with Bentley	1752-1753	15	1759
Patrington	1786-1819	68	1768
Tunstall	1803-1830	13	1779
Skipton	1808-1827	17	1774
Great Ayton	1818	1	
Adwick le Street	1822	4	1761
Barnburgh	1832-1833	10	1822
Whiston	1832-1837	8	1823

The sparse usage in Yorkshire parishes contrasts markedly with the practice in parishes and counties to the south, table 2 listing studies of vermin bounty payments where the term *Polecat* was exclusively used.

Table 2. Parishes and counties to the south of Yorkshire where the vernacular term *polecat* was exclusively used in churchwardens' accounts.

County	Parish name or number of parishes	Date range	Source
Bedfordshire	79	1676-1835	Elliott, 1936
Buckinghamshire	Hambleden	1722-1808	Cocks, 1892
Cambridgeshire	Dry Drayton		Walker, 1892
Denbighshire	Llanynis	1744-1749	Oldham, 1931b
Hertfordshire	22	1683-1826	Oldham, 1931a
Kent	Tenterden	1626-1697	Ticehurst, 1935
Merioneth	15	1723-1757	Hope-Jones, 1974
Northamptonshire	Rushden; Corgrave	1707-1833	Internet note 1
Oxfordshire	Spelsbury; Pyrton		Weaver & Clark, 1925
Somerset	Chewton Mendip	1699-1759	Internet note 2

Cultural and Temporal changes

In works of taxonomic classification vernacular names are unimportant, thus in John Ray's *Synopsis Methodica Animalum Quadrupedum et Serpentini Generis* of 1693, the animal is referred to in Latinised form as *Putorius.* Otherwise, throughout the history of published English literature, the *Polecat* form, with its Old French lineage is generally preferred. This can be traced back to Geoffery Chaucer in *The Pardoner's Tale* component of the *Canterbury Tales*

written during the 1380s (Skeat, 1947).

> *"And eek there was a polcat in his howe,*
> *That, as he seyde, his capons hadde y-slawe."*

The practice is continued in Thomas Pennant's *Synopsis of Quadrupeds* of 1771 with British authors through the 18th Century and onwards largely referring to *Mustela putorius* as the Polecat. However, William Bingley in his *Memoirs of British Quadrupeds* of 1809, though keeping to tradition, perhaps betrays his Doncaster origins by referring to other names including *foumart* and *foolmart*. Also in two examples tailored for a popular and more northern readership, the rustic form *fomet* was retained by Thomas Simpson in *The Complete Vermin Killer* published in York in 1772 and the section heading of '*The Foumart'* was retained by Thomas Bewick in *A General History of Quadrupeds* published in Newcastle in 1790.

A third but far less used vernacular term for Polecat, which Thomas Simpson (1772) the East Yorkshire grazier referred to, was *Fitchat, Fitchew* and *Formet*. Millais (1905) identifies the etymological origin of this form in the Old French *fissaw*, to make a disagreeable smell. This vernacular form identified Polecats in the widely dispersed counties of Cornwall, Shropshire, Staffordshire and Lancashire (see table 3, p168), where its use tends to be associated with the fur trade (Veals, 1966). It was encountered only once in this study when, in the churchwardens' accounts for the parish of Hook, a bounty of 6d was paid in 1817 for 3 *Fitchats*. Here, the tariff of 2d per head, particularly at the very late date of 1817, would suggest that the term was being used as a synonym for Weasel *Mustela nivalis* which commanded the bounty of 2d per head throughout the 18th and 19th centuries whereas the larger foumart or Polecat commanded the bounty payment of 4d per head.

Inconsistencies

In certain geographical locations and at various temporal periods, the terms foumart and indeed polecat evidently did not exclusively refer to the *M. putorius*. Clarke & Roebuck (1881) note that in the north-western fells the Stoat *M. erminea* has been referred to as the *polecat*, the name sometimes corrupted, as in Upper Nidderdale, to *powcat* (Clarke, Roebuck & Storey 1886) and in the Western Ainsty (an area of the southern Vale of York between York and Leeds) it was referred to as *foumart* (Waite, 1891) and Tony French (pers. comm. 2021) remembered his grandfather in the parish of Braithwell using the term *fumerd* as a rustic synonym for Stoat.

Locating the Isogloss

In attempting to refine the location of the polecat/foumart linguistic boundary (= isogloss), 24 samples of county mammal reports in the *Victory Histories of the Counties of England* series were examined. These formulaic faunal statements were compiled by a range of local and national experts and published broadly within the first decade of the 20th Century (see table 3, p168). Despite their regional focus and temporal synchronicity, there seems by that time to have been an editorial policy of standardising nomenclature, thus from Cornwall and Devon to Essex and Kent, from Shropshire and Lancashire to Norfolk and Suffolk and from Hampshire and the Isle of Wight to Durham, sections referring to *Mustela putorius* are uniformly headed '*The Polecat'*. However, authors from four counties, referred to the *foulmart* form having been used as a local vernacular.

Table 3. Vernacular names for *Mustela putorius* in the Mammal reports in the Victoria Histories of the Counties of England.

County	Date	Author	Vernacular name	Local Names
Bedford	1904	J. Steel-Elliott	Polecat	
Berkshire	1906	Charles J. Cornish	Polecat	
Buckinghamshire	1905	A.Henage-Cocks	Polecat	
Cornwall	1906	Jas. Clark	Polecat	Fitcher
Cumberland	1901	Rev. H.A. Macpherson	Polecat	Foumart; Foul Mart.
Derbyshire	1905	Rev. F.C.E. Jourdain	Polecat	
Devonshire	1906	J. Brooking Rowe	Polecat	
Durham	1905	E. Leonard Gill	Polecat	
Essex	1903	H. Laves	Polecat	
Hampshire & the Isle of Wight	1900	A.Trevor-Battye & the Hon. Gerald Lascelles	Polecat	
Hertfordshire	1902	A.F. Crossman	Polecat	
Kent	1908	F.J.Baver	Polecat	
Lancashire	1906	H.O. Forbes	Polecat	Foumart; Fitchet
Leicestershire	1907	Montague Brown	Polecat	Foumart (i.e. Foulmart)
Northamptonshire	1902	Lionel E. Adams	Polecat	
Nottinghamshire	1906	Prof. J.W. Carr	Polecat	
Norfolk	1901	Thomas Southwell	Polecat	
Shropshire	1908	H.E. Forrest	Polecat	Foumart; Fitchet
Stafford	1908	H.G. Storer	Polecat	Fitchet
Suffolk	1911	G.T. Rope	Polecat	
Surrey	1902	J.A. Bucknill & H.W. Murray	Polecat	
Sussex	1905	W.C.J. Ruskin Butterfield	Polecat	
Warwick	1904	R.F. Tomes	Polecat	
Worcestershire	1901	R.F. Tomes	Polecat	

Western outliers from this source are in the VCR mammal lists for Shropshire, where H.E. Forrest (1908), and Lancashire, where H.O. Forbes (1907) note *Foumart* as local names and for Cumberland, the most northerly from this source, where Rev. H.A. Macpherson (1901) notes *Foumart* and *Foul Mart* as local names. However, the most southerly outpost located for this vernacular name was from Leicestershire where Montague Brown (1907) referred to '*Foumart* (i.e. *Foulmart*)' being used locally.

Discussion

Brown (2002) inferred that the terms *polecat* and *foulmart* both referred to *M. putorius,* suggesting that *polecat* referred to the animal whereas *foulmart* referred to the commercial pelt. This is an understandable interpretation until you encounter geographical patterns of usage across Britain and particularly the extensive and historically exclusive use of the *foulmart* vernacular form across Yorkshire and north Britain.

It seems likely that, over time, the use of the *polecat* name was imported into the 13 widely scattered parishes in Yorkshire, possibly by churchwardens or clerics with cultural affiliations rooted in the south of Britain where its use was universal.

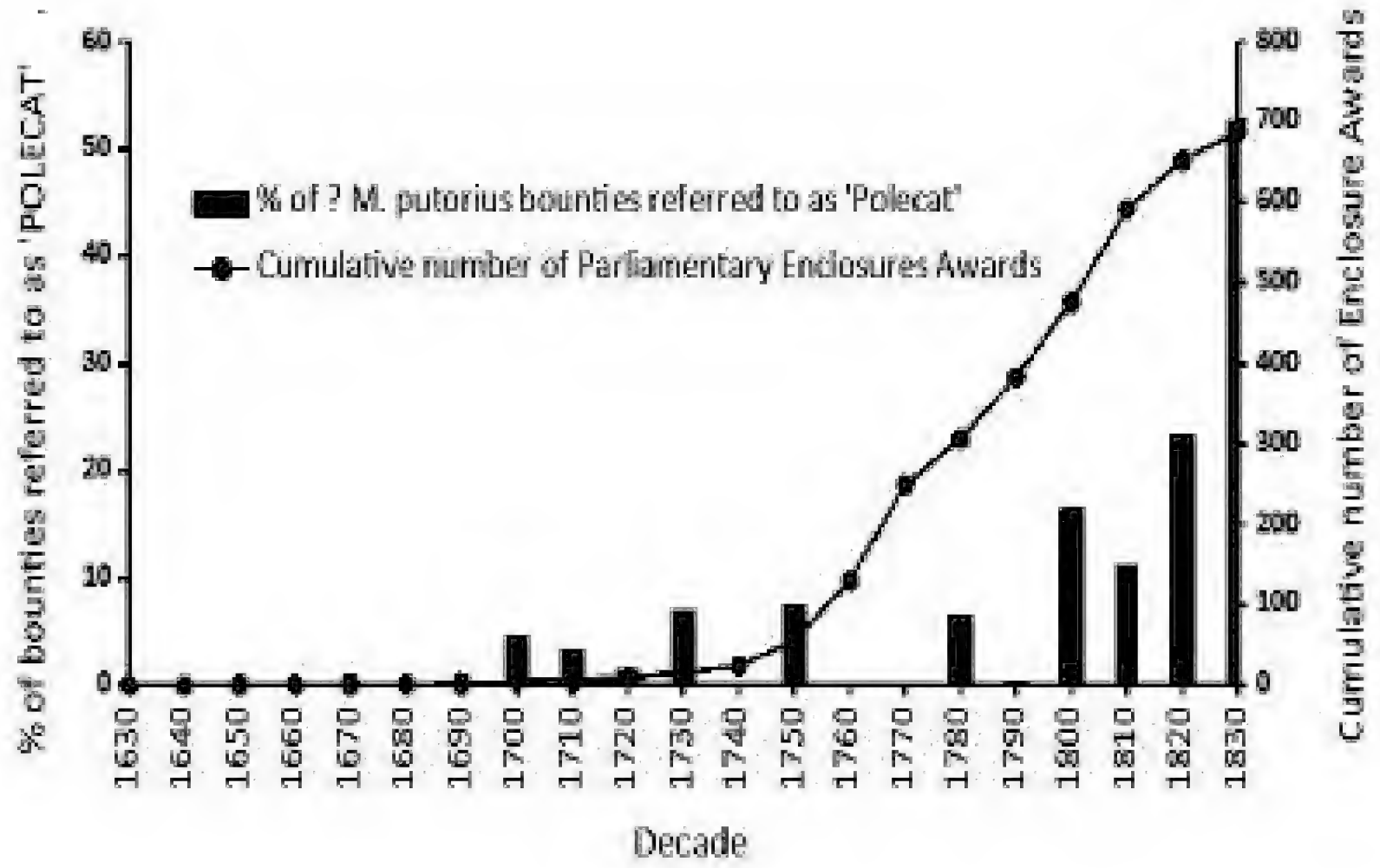

Figure 2: The rise in the use of the vernacular term *Polecat* in vermin bounty payments in Yorkshire parishes 1630s to 1830s as expressed by comparing the % of *M. putorius* bounties referred to as Polecat with the number of local Parliamentary Enclosure Awards.

A possible temporal trend which may provide a clue as to the source of this cultural influence is in table 1 which lists six parishes where the use of the term *polecat* post-dated the physically and socially disruptive implementation of local parliamentary enclosure awards. Figure 2 illustrates the rise in the use of the vernacular term *Polecat* in vermin bounty payments in Yorkshire parishes 1630s to 1830s by comparing the increasing % of *M. putorius* bounties referred to as Polecat with the cumulative number of local Parliamentary Enclosure Awards. This change may be related to a cultural influence coincidental with employment mobility through the recruitment of staff for the game estates, game keeping and Georgian farm management following the progressive implementation of the Parliamentary Enclosure Awards, incomers 'bringing their fancy talk with them!' Finally, the use of the *foumerd* form formerly perpetuated by word of mouth in its northern heartland is likely to have been ultimately supressed by the use of the *polecat* form which prevailed in the published literature.

Acknowledgements

Thanks are due to Professor Mark Seaward who supervised this and various other mammal related projects over many years. Invaluable assistance with archival searches was provided by Annie Naylor.

References

Internet note 1:
https://www.rushdenheritage.co.uk/churches/StMary's/Churchwardensaccounts.html)
Internet note 2:
https://chewtonmendiphistory.wordpress.com/topics/government-new/churchwarden-accounts-1699-1759/

Baldwin, E.T. (1878) Provincial names of British animals. *Zoologist Series* 3 (2): 332.
Bewick, T. (1790) *A General History of Quadrupeds*. S. Hodgson, R. Bielby and T. Bewick, Newcastle Upon Tyne.
Bingley, W. (1809) *Memoirs of British Quadrupeds*, London.
Brown, D. (2002) The foulmart: what's in a name? *Mammal Review* 32: 145-149.
Clarke, W.E. & Roebuck, W.D. (1881) *A Handbook of the Vertebrate Fauna of Yorkshire*. London, Lovell Reeve, London.
Clarke, W.E., Roebuck, W.D. & Storey, W. (1886) Upper Nidderdale and its fauna. *The Naturalist* 11:193-211.
Cobham, A. (1982) *Dialect: A Glossary of Lancashire words as spoken in Mawdesley*. Privately published.
Cocks, A.H. (1892) "Vermin" paid for by churchwardens in a Buckinghamshire parish. *The Zoologist*. Series 3 (16): 61-64.
Coult, T. & O'Hara, K. (2012) Polecat pp.36-38 in Bond, I. (ed.) Mammals, Amphibians and Reptiles of the North East. *Northumbrian Naturalist* 73.
Dinsdale, F. (1849) *A glossary of provincial words used in Teesdale in the County of Durham*. London, J.R.Smith.
Elliott, J.S. (1936) *Bedfordshire 'Vermin' Payments*. Luton, Luton Museum.
Hope-Jones, P. (1974) Wildlife records from Merioneth parish documents. *Nature in Wales* 14: 35-43.
Howes, C.A. (1989) A historical review of the otter *Lutra lutra* L. in Nottinghamshire. *The Naturalist* 123: 27-38.
Howes, C.A. (2009) *Changes in the status and distribution of mammals of the order Carnivora in Yorkshire from 1600*. Unpublished PhD, Dept. Archaeological, Geographical and Environmental Sciences, University of Bradford.
Nelson, T.H. (1881) Some ancient records relating to the wild animals of Northumberland. *The Zoologist* (Series 3) 5: 172-175.
Millais, J.G. (1905) *The Mammals of Great Britain and Ireland*. Longmans Green & Co. London. Vol II.
Oldham, C. (1931a) Payments for 'vermin' by some Hertfordshire churchwardens. *Trans. Hertfordshire Nat.Hist.Soc.Field Club* 19: 79-112.
Oldham, C. (1931b) Payments for 'vermin' and for 'Dog Tongues' in the parish of Llanynys, Denbeighshire. *North Western Naturalist* 6 (1): 13-17.
Pennant, T. (1771) *Synopsis of Quadrupeds*. London.
Ray, J. (1693) *Synopsis Methodica Animalum Quadrupedum et Serpentini Generis.* London.
Ritchie, J. (1920) *The Influence of Man on Animal Life in Scotland*. Cambridge University Press, London'
Simpson, T. (1772) *The Complete Vermin Killer*. John Smith, York.
Skeat, W.W. (1947) *The Complete Works of Geoffrey Chaucer*. London, Oxford University Press.
Ticehurst, N.F. (1935) Rewards for vermin-killing paid by the churchwardens of Tenterden 1626-1712. *The Hastings and East Sussex Naturalist* 5 (2): 69-82.

Veals, E.M. (1966) *The English Fur Trade in the Later Middle Ages*. New York: Oxford University Press.
Waite, E.R. (1891) Vertebrates of the Western Ainsty. *The Naturalist* 16: 81-114.
Walker, F.A. (1892) Churchwardens' Accounts at Dry Drayton. *The Zoologist* Series 3 (16): 189
Weaver, F.W. & Clark, G.N. (1925) Churchwardens' accounts of Marston, Spelsbury and Pyrton. *Oxfordshire Record Society.* Vol. 6.
Wilson, J. (1923) *The Dialect of Robert Burns as spoken in central Ayreshire*. Oxford, OUP.

Habitat analysis of 35 Yorkshire sites according to numbers of wasp and bee species

Michael E. Archer 17 Elmfield Terrace, York YO31 1EH
Email: marcher756@yahoo.com

Introduction

Aculeate wasps and bees are associated with open, sunny and sheltered sites. Their main requirements are food resources, particularly pollen and nectar for bees, prey for wasps, and nesting sites (either subterranean, usually in dry friable soils or aerial in hollow plant stems, old beetle burrows in dead wood and crevices in old mortar). This study considers five questions concerning the number of species recorded from a site:

1) Site area: could more species be recorded from larger sites?

2) Site geographical location and/or habitat type: could the numbers of species vary with geographical position in the county and/or habitat type?

3) Time intervals between sampling and influence of nearby sites: How might the perceived species composition of a site be influenced by variations in the time intervals between sampling or the influence of sites nearby and, if this influence appears significant, could it be due to habitat or recording differences?

4) Number of site visits required: How many visits should be made to a site to get a true measure of the number of species present? The traditional method is to visit a site until new species are no longer recorded. However, statistical methods, both parametric and non-parametric, for estimating the potential number of species on a site (Magurran, 2004) may suggest further visits could increase the measured species richness.

5) Why species visit a site? Some species could be finding all the resources they needed on the site (residents) or were using the site only for some resources or perhaps were there by chance (tourists and vagrants).

Methods

Each site was visited usually between April and September during warm sunny weather. For most sites, even large ones such as Crow Wood, Pollington Quarry and Hatfield Moor, all suitable habitats for bees and wasps, could be visited in one day. However, in the case of Allerthorpe and Strensall Commons, more than one visit was required to cover all suitable habitats. All species were either named on site or collected with a hand net for later determination.

Visits were carried out during the 1970s to the 2000s with each site visited continually until no new species were recorded, the traditional approach. This usually amounted to between 10 and 20 visits for each site.

The total number of solitary and social wasp (excluding the DEBs: Dryinidae, Embolemidae & Bethylidae) and bee species considered consisted of species from the Archer records plus records of other collectors found in publications or museums, some of which could be extensive in number: J. Wood for Holmehouse Wood and Shipley Glen, J. Burn for Crow Wood, P. Skidmore for Thorne Moor and W.J. Fordham, from the Fordham Cards, for pre-coniferous Allerthorpe Common.

The statistical analysis for estimating species richness was applied to 25 sites using only the solitary wasp (excluding the DEBs) and bee species from the Archer records. Two non-parametric procedures were applied, those of Chao (1984, present in Colwell & Coddington, 1994) and Jackknife (Heltshe & Forrester, 1983)

The Chao estimate of the potential number of species (S_{max}) is equal to $S_{obs} + (a^2/2b)$ where (S_{obs}) is the number of species recorded on a site, (a) is the number of species recorded on one visit and (b) the number of species recorded on two visits. The Jackknife estimate (S_{max}) is equal to $S_{obs +}$ a(n – 1/n) where 'n' is the number of visits (samples). The S_{max} were calculated. The software for the calculations of the Chao and Jackknife procedures was obtained from Pisces Conservation Ltd. This software takes 1, 2, etc. samples (visits) at random many times, each time calculating a mean estimate of the potential number of species. With a small number of samples the estimates may be erratic with the Chao procedure or gradually increasing with the Jackknife procedure, but as more samples (visits) are selected the estimates may reach the upper asymptote giving confidence in the estimates. If the Chao and Jackknife estimates reach the upper asymptote and are of similar value then a good estimate of the potential number of solitary species for a site was assumed to have been made. More visits were made as a consequence of the statistical analysis.

The Morisita-Horn procedure was used to consider the number of times each species was recorded for each site to calculate the similarity between sites. This procedure gives more importance to the more abundant species (Magurran, 1988).

The nesting habitats of the solitary species was investigated by using The Aerial Nesting Frequency [ANF = 100 x Aerial Nesting Species/(Aerial Nesting + Subterranean Nesting Species)].

The species found on a site could be residents, tourists or vagrants. Vagrant species normally occur far away from the geographical area of the site. Resident species obtain all their resources, mainly nesting and food, from the site while tourist species, although occurring in the geographical area of the site, either only obtain some of their resources (e.g. food) on the site or occur on the site by accident.

It is often difficult to separate resident and tourist species. Tourists may be recorded only on one or a few visits. Unfortunately, such species could also be rare residents. It is suggested that tourist species can be recognized as follows:

1. If species are generally common and widespread then they would be expected to be found on several visits. Then they can be considered residents but, if only found on one or very few visits, they can be considered as tourists.
2. If species are cleptoparasites whose hosts are tourist species as defined in 1.
3. If they appear to arrive by accident, because they are visiting the 'wrong' habitat because the necessary resources for that species are absent.

Usually only criteria 1 or 2 were used.

Results

1. Site Area

Figure 1 shows that there is no relationship between the size of sites and the number of social and solitary wasp and bee species.

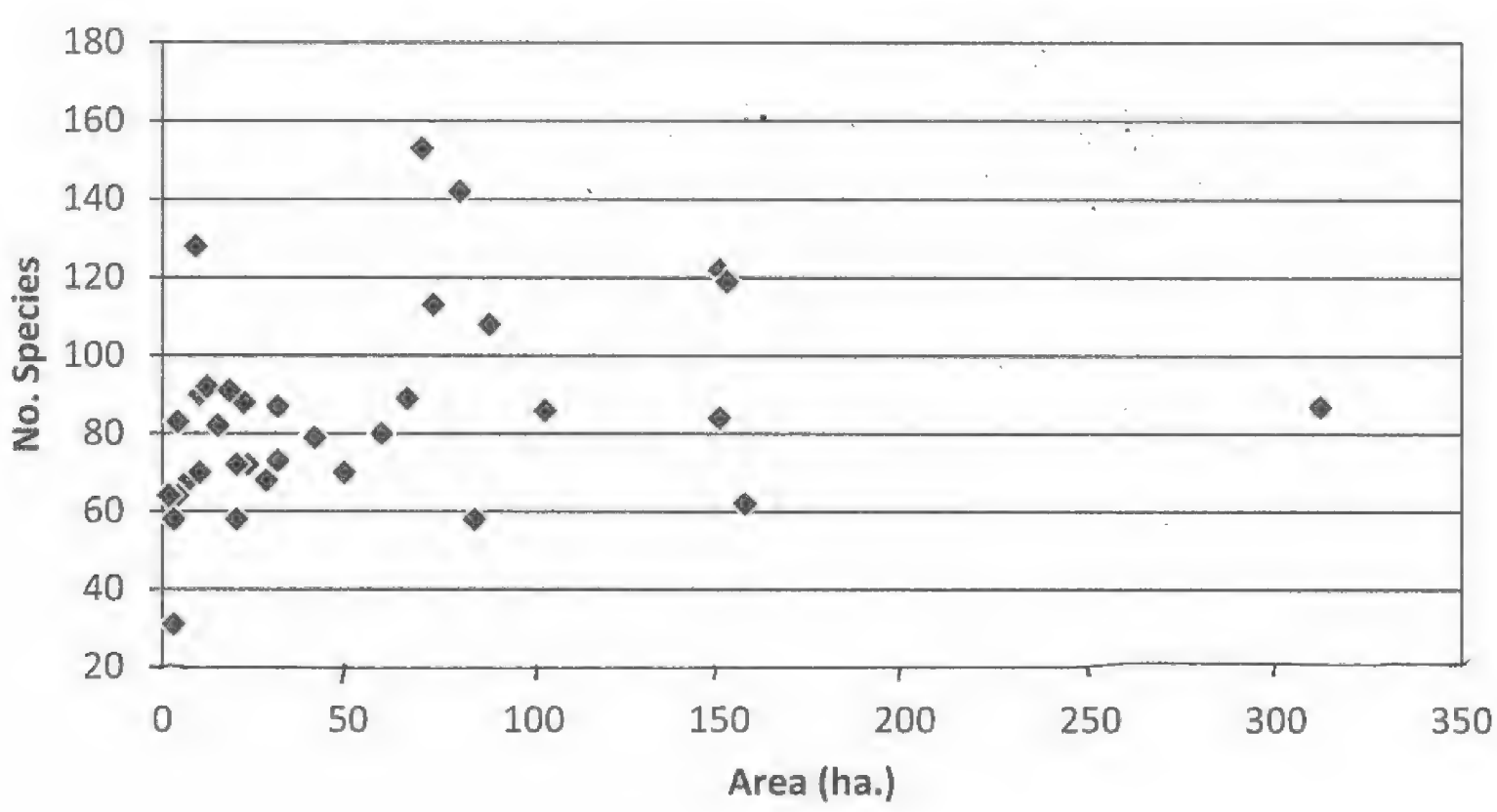

Figure 1 – The number of social and solitary wasp and bee species versus area for each site.

2. Site names, regions of Yorkshire and habitat type

These are shown in Table 1, p174. The sites can be roughly divided into North (11 sites), West (7), East (9) and South (8) Yorkshire.

The 35 sites were divided into ten habitat types with the number of sites in brackets as follows: Heathlands (7), Woodlands (6), Sandy quarries & pits (4), Calcareous quarries (3), Moorland (6), River banks (3), Coastal (1), Countryside (2), Cemetery (1) and Farms (2). All the woodlands and moorlands, except Caydale which is calcareous, have sandy soils, although Thorne and Hatfield Moors, particularly Thorne, have lowland peat areas. Based on the number of solitary and social species per site, the 35 sites can be graded from Excellent to Poor (Table 1).

Lowland Moorlands (Thorne, Hatfield and Gundale) were Excellent or Very Good while Higher Moorlands (Brimham Rocks, Caydale and Seckar Moor) were Very Good to Good. Deciduous Woodlands were Very Good but not the Coniferous Woodland of Haw Park which was only

Mediocre. The Quarries and River Bank were Excellent to Good. Coastal, Cemetery and Countryside were Good. The two Farms were Mediocre or Poor sites.

Table 1. The numbers of species recorded on the 35 sites followed by habitat type (Coastal-C, Cemetery-CE, Countryside-CS, Farmland-F, Heathland-H, Moorland- M, Quarry Calcareous-QC, Sandy Quarry or Sand pit-QS, River Bank- RB, Woodland-W) and region of Yorkshire (North Yorkshire- NY, West Yorkshire-WY, South Yorkshire-SY, East Yorkshire-EY).

Over 100spp. Excellent Sites			**80-90 spp. Very Good Sites**			**60-70 spp. Good Sites**			**50s spp. Mediocre Sites**		
Allerthorpe Common	H	EY	Blaxton Common-2	H	SY	Beningborough	RB	NY	Haw Park	W	WY
Blaxton Common	H	SY	Brayton Barff	W	NY	Brimham Rocks	M	NY	Manor Farm	F	NY
Crow Wood	H	SY	Burton Leonard	QC	NY	Cave Wold	QC	EY	Seckar Moor	M	WY
Hatfield Moor	M	SY	Duncombe Park	W	NY	Caydale	M	NY			
Pollington Quarry	QS	EY	Gundale	M	NY	Cornelian Bay	C	NY			
Strensall Common	H	EY	Holmehouse Wood	W	WY	Fulford Ings	RB	EY			
Thorne Moor	M	SY	Keswick Fitts	RB	WY	Lindrick Dale Quarry	QC	SY			
			Rossington Bridge	W	SY	Pompocali	QS	WY			
			Shipley Glen	QS	WY	Ringhay	CS	WY	**30s spp. Poor Site**		
			Skipwith Common	H	EY	South Cliff Common	H	EY			
			Station Wood	W	SY	Stutton	CS	NY	Hopewell Farm	F	NY
			Thornton Ellers	QS	EY	York Victorian	CE	EY			

3. Time intervals between sampling and influence of nearby sites

Comparisons were possible between different time periods at four sites. One comparison was possible between adjacent sites.

The solitary species of Shipley Glen (Archer, 1996) were recorded by J. Wood (46 species) between 1919 and 1949 and M.E. Archer (52 species) between 1979 and 1994, but only 33 species were common to both samples. Thus, about 37 (59%) of the species are similar between sampling time periods. The Morisita-Horn index was 73% indicating an increased similarity between the Wood and Archer samples.

The solitary species of Holmehouse Wood (Archer, 1999) were recorded by J. Wood (31 species) between 1918 and 1951 and by M.E. Archer (32 species) between 1988 and 1996, but only 33 species were common to both samples. Thus, about 28 (60%) of the species are similar between the sampling time periods. The Morisita-Horn index was 73.1% indicating again an increased similarity between the Wood and Archer samples.

Archer recorded at two sites of similar area at Blaxton Common which were close, almost

contiguous. Blaxton Common (Archer, 1995) was recorded with 91 solitary species between 1980 and 1993 and Blaxton common-2 (Archer, 2010) with 72 solitary species between 2004 and 2006 but only 45 species were common to both samples.

Archer (2012) collected all the records of solitary wasps and bees during three periods for Allerthorpe Common. The mainly pre-coniferous period was from 1901 and 1967 (period 1, 144 spp.) and for two periods, 1971 to 1999 (period 2, 104 spp.) and 2004 to 2008 (period 3, 108 spp.) after the development of a coniferous forest. Between period 1 and periods 2 & 3 there was a loss of species and between periods 2 and 3 there was a slight increase in the number of species.

Archer (2011b) collected all the records of solitary wasps and bees during two periods for Strensall Common: the earlier 1981-1983 and the later 2004-2009. Between the two periods there was an increase in the number of species

4. Number of site visits required:

The validity of applying the Chao and Jackknife estimates was tested using data from Blaxton -2 (Figure 2). Since the two potential estimates reach the upper asymptote and the final predicted values for the Chao (86 species) and Jackknife (92 species) estimates are similar, these estimates are assumed to be good estimates of the potential number of solitary species.

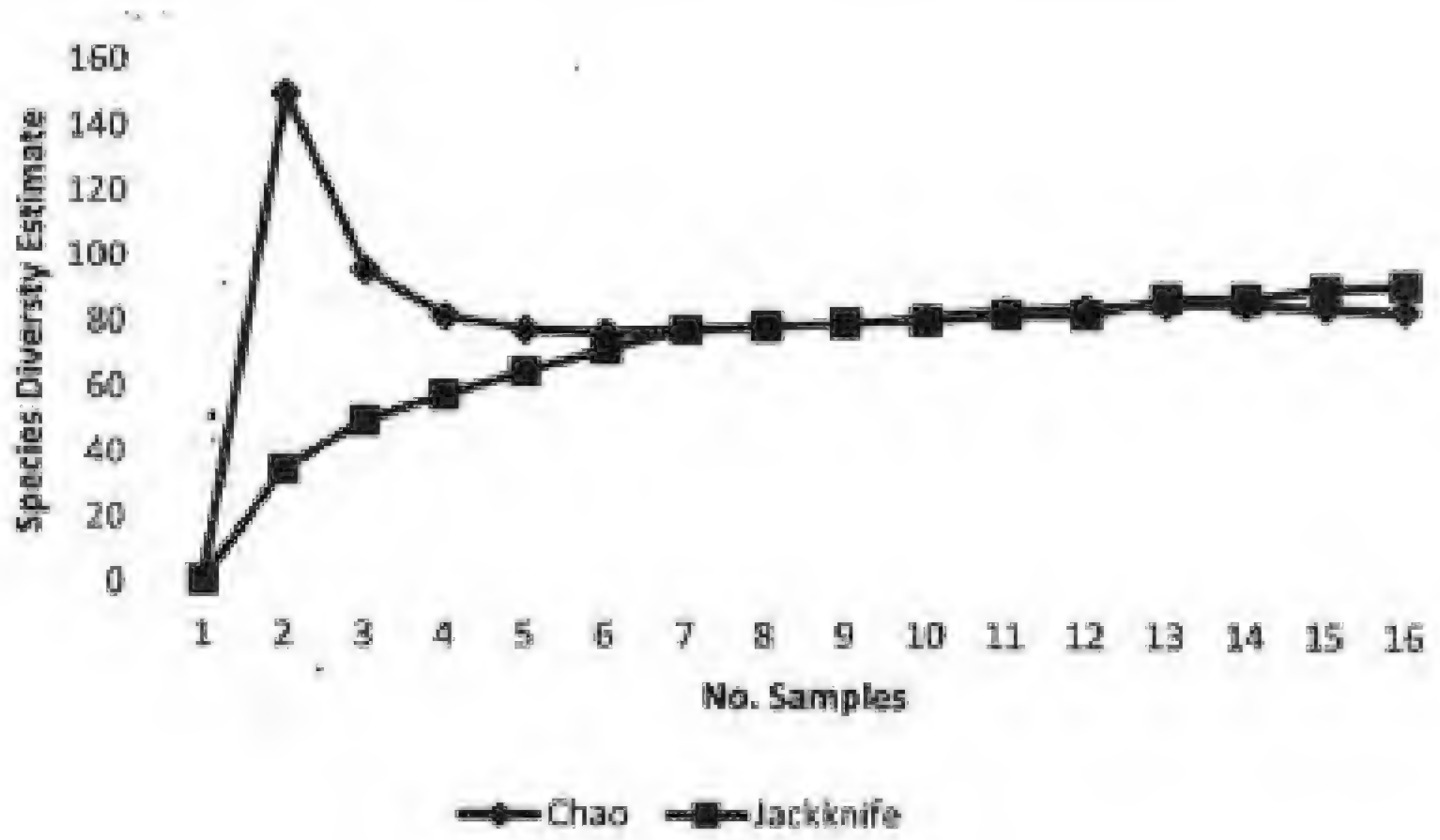

Figure 2. The Chao and Jackknife estimates versus number of samples selected randomly for Blaxton Common-2.

Table 2, p176 shows the statistical analysis of the number of solitary wasp (excluding the DEBs) and bee species recorded only by Archer for 25 sites. Table 2 also shows the Chao and Jackknife potential number of solitary species for each site, whether the two estimates reach the upper asymptote and if the Chao and Jackknife were similar or of very different values

and the percentage of the Archer sample, by traditional sampling, recorded by the Chao and Jackknife procedures.

Table 2. The results of the Chao and Jackknife estimates for each site. (P=Period). Ref. date refers to the relevant Archer paper listed at the end.

Site	Area (ha.)	No. of sol. & soc. Wasps & Bees	Archer No. Visits	Chao	Jack-knife	Upper Asympt.	Archer no. of solitary Species	% of Chao and Jackknife	Ref. date
Caydale	49	70	13	86	81	Yes	54	63, 67	2001
Gundale	59	80	18	75	79	Yes	59	79, 75	2001
Seckar	20	58	17	46	48	Yes	35	76, 73	2001
Cornelian	23	72	16	79	77	Yes	57	72, 74	2002b
Brayton	31	87	19	99	99	Yes	72	72, 72	2003
Ringhay	20	72	17	76	76	Yes	56	74, 74	2003
South Cliff	41	79	15	86	87	Yes	65	76, 73	2003
Thornton Ellers	4	83	14	86	91	Yes	71	83, 78	2003
Fulford Ings	28	68	24	69	72	Yes	54	78, 75	2005
Haw Park	84	58	17	59	61	Yes	46	76, 74	2005
Stutton	31	73	16	82	83	Yes	61	73, 72	2005
Hatfield	70	177	24	118	120	Yes	92	78, 77	2011c
Blaxton Common-2	150	84	16	105	116	Yes	90	86, 78	2010
Station Wood	10	90	15	108	101	No	69	64, 68	2002a
Rossington Bridge	18	91	15	108	97	No	66	61, 68	2002a
Beningbrough	7	68	16	92	76	No	53	58, 70	2001a
Keswick Fitts	12	92	18	109	106	No	79	72, 75	2001a
Blaxton Common	150	122	17	105	116	No	91	86, 78	1995
Brimham Rocks – P1	157	57	20	70	58	No	40	57, 69	
Brimham Rocks – P2	157	62	27	63	60	Yes	45	71, 75	2009
Duncombe Park – P1	103	77	14	75	81	No	62	83, 77	
Duncombe Park – P2	103	85	19	86	90	Yes	70	81, 78	
Duncombe Park – P3	103	86	24	88	90	Yes	71	81, 79	2008
Burton Leonard – P1	22	75	16	66	73	No	53	80, 73	
Burton Leonard – P2	22	79	20	72	78	No	62	86, 79	
Burton Leonard – P3	22	88	26	79	88	Yes	71	90, 81	2008

Earlier Strensall Common	80	105		101	104	Yes	78	77, 75	
Later Strensall Common	80	112		114	125	Yes	98	86, 78	2011b
Allerthorpe Period 1	88	144							
Allerthorpe Period 2	88	104	76	101	102	No	79	78, 78	
Allerthorpe Period 3	88	108	39	114	114	No	88	77, 77	2012
Pollington Quarry + T	9	103	28	140	134	No	103	74, 77	
Pollington Quarry - T	9	83	28	93	97	Yes	83	89, 86	2006
York Victorian Cemetery	10	70	34	64	68	Yes	55	86, 81	2004

For the 13 sites from Caydale to Blaxton Common-2 (Table 2) the potential estimates of the Chao and Jackknife procedures became similar and the upper asymptote has been reached so a sufficient number of visits was assumed to have been made. The potential estimates were always higher than the solitary species recorded by Archer so more species could be present on each site. For the Chao procedure the percentage of the Archer sample varied from 63-86% (mean 76%) and for the Jackknife procedure varied from 67-78% (mean 74%). Similarly, for the Earlier and Later Strensall Common, Pollington Quarry (without Tourist species) and York Victorian Cemetery, the upper asymptotes have been reached and the Chao and Jackknife procedures became similar, but still the potential estimates are higher than those of the Archer samples.

For the eight sites from Station Wood to Burton Leonard and Pollington Quarry (with Tourist species) (Table 2) the upper asymptotes were not reached and the estimates between the two procedures were variable. This indicated that more visits were required.

More visits were made to three sites (Brimham Rocks (period 1 – 1974-1998, period 2 - 2001-2003) Duncombe Park (period 1 – 1985-1990, period 2 – 1999, period 3 - 2002-2003), Burton Leonard (period 1 – 1987-1994, period 2 - 1999, period 3 – 2002-2003) when more species were found and the upper asymptotes were reached and the potential estimates became similar, except for Burton Leonard (Table 2). For these three sites no changes to habitat were recorded.

For Allerthorpe Common (Table 2) for periods 2 and 3 the upper asymptotes of the two procedures were not reached, although the potential estimates of the two procedures became similar. Data for the Chao and Jackknife procedures from just the Archer samples during periods 2 and 3 varied from 77-78%

For Pollington Quarry an unusually large number of 28 visits were necessary before the two estimates reached the upper asymptote and were of similar values when all samples are considered (Table 2). Pollington Quarry is a large (9ha.) sandy site and could be attracting tourists from the surrounding countryside. Twenty tourist species were readily recognized and, when subtracted, the upper asymptote was reached and the potential estimates of the two procedures were similar (Table 2).

York Victorian Cemetery is also a large (10ha.) isolated site surrounded mainly by urban development and could be attracting tourist species from the surrounding gardens (Archer, 2004, 2007). With such a large number of visits (34) the upper asymptote was reached and the potential estimates of the two procedures were similar (Table 2). The Archer samples for these two sites for the Chao procedure varied from 86-89% (mean 87%) and for the Jackknife procedure varied from 86-81% (mean 83%).

5. Why species visit a site?

Tourist species could be found at all sites. This included those species which are regarded as being common and widespread but only represented by one record. These included: *Colletes daviesanus*, *Andrena chrysosceles* and *Trypoxylon clavicerum* at Station Wood, *Trypoxylon figulus* at Duncombe Park, *Andrena clarkella* and *A. fucata* at Burton Leonard, *Chrysis angustula* and *Crossocerus megacephalus* at Caydale, *Hylaeus communis* and *Chrysis ignita* at Gundale, *Andrena bicolor* and *Crossocerus cetratus* at Fulford Ings, *Andrena subopaca* and *Nomada panzeri* at Pollington Quarry and *Lasioglossum villosulum* and *Mellinus arvensis* at York Victorian Cemetery.

Kleptoparasites of common and widespread species which were only recorded once because their host(s) were only recorded once or absent included: *Sphecodes ephippius* and its host *Lasioglossum calceatum* at Station Wood, *Chrysis ignita* and its *Ancistrocerus* hosts which were absent at Gundale, *Nomada rufipes* and its host *Andrena denticulata* at Fulford Ings and *Sphecodes geoffrellus* and its *Lasioglossum* hosts at York Victorian Cemetery.

Species regarded as common and widespread but only recorded once, probably because some necessary resource was absent or scare, included *Megachile willughbiella* at Fulford Ings where its nesting resource, decaying tree trunks, were absent, *Colletes daviesanus* at Station Wood where its nesting resource, usually a firm often vertical, sandy surface was absent, and *Crossocerus annulipes* at Caydale where its nesting resource, usually old beetle burrows in wood, were absent.

Only one vagrant species was found at York Victorian Cemetery (*Eumenes papillarius* (Christ). This is not a British species but is found in continental Europe.

Discussion

1. Site Area

This lack of a relationship between the area and the number of solitary and social wasp and bee species of a site is a consequence of trying to compare sites with different habitats. Thus, a small site could have many species, e.g. Thornton Ellers is a sand pit of small area (4ha.) with many (83) species and, similarly, Beningborough is a river bank of small area (7ha.) with many (68) species. To investigate a species-area relationship the sites should be of similar habitat. Such a comparison was not possible in this study because the number for each habitat type was too small.

2. Site geographical location and/or habitat type

The southern Yorkshire sites were generally rated higher because of experiencing warmer weather than the northern sites. Southern Yorkshire also had the three main lowland heathlands besides the only large lowland moorland of Thorne and Hatfield. The farms are rated lower

because much of the land is cultivated and the recorded species were mainly restricted to the area around the farm buildings. Haw Park was rated low because it is a dark coniferous forest with recorded species restricted to the rides and edges.

3. Time intervals between sampling and influence of nearby sites

Records collected during different year periods or from adjacent sites were found to be different and could be related to habitat differences or recording differences.

Why should the species recorded in the later Archer and earlier Wood data for Shipley Glen and Holmehouse Wood be so different? It is unlikely that habitats of the two sites between the two recordings were different. The Morisita-Horn procedure gives more emphasis to the common species rather than the rare ones. Thus it could be that the two recorders just recorded different rare species because of the difficulty of finding rare species.

There were habitat differences between the Blaxton Common sites. Blaxton Common consisted of rectangular open areas separated and sheltered by scrub and woodland while Blaxton Common-2 mainly consisted of open, relatively unsheltered, space. This has resulted in the lack of aerial nesters (Table 3) at Blaxton Common-2.

Table 3. The Aerial Nester Frequency of the solitary wasp and bee species of Blaxton Common, Blaxton Common-2 and York Victorian Cemetery.

	Blaxton Common		**Blaxton Comon-2**		**York Cemetery**	
	Solitary Wasps	Solitary. Bees	Solitary. wasps	Solitary Bees	Solitary wasps	Solitary bees
Aerial Nester Frequency	43.1%	13.09	3.8%	4.0%	81.0%	40.0%

The loss of species during periods 2 and 3 compared with 1 at Allerthorpe Common was mainly due to afforestation with conifers and the removal of much bramble and dead wood during this process. This has resulted in the lack of aerial nesters (Table 4). The increase between periods 2 and 3 was mainly due to the removal of some woodland resulting in an increase of aerial nesters.

Table 4. The Aerial Nester Frequency of the solitary wasp and bee species during three periods of recording at Allerthorpe Common.

	1901-1967		**1971-1999**		**2004-2008**	
	Solitary Wasps	Solitary Bees	Solitary Wasps	Solitary Bees	Solitary Wasps	Solitary Bees
Aerial Nester Frequency	47.1%	16.3%	25.0%	7.4%	29.4%	14.7%

The increase in species between the Earlier and Later periods of Strensall Common was due to a habitat change when The Yorkshire Wildlife Trust periodically removed trees and taller shrubs from their 42.5ha nature reserve.

4. Number of site visits required

Potential estimates of the number of solitary species are always higher than the traditional method. This is particularly illustrated at Brimham Rocks, Duncombe Park and Burton Leonard Lime Quarry, where new species were found by taking more samples. The new species found were new species for Yorkshire (*Crossocerus distinguendus* and *Andrena synadelpha)* at Burton Leonard, further tourist species and many species only occasionally found or rare, so easily missed during period 1.

The traditional method needs to be supported by a statistical procedure, particularly to discover whether more samples need to be taken. The traditional method usually records in the 70% range of the potential estimates.

At the York Victorian Cemetery subterranean nesting solitary wasp and bee species were rarely found but subterranean species were seen flying into the cemetery. In contrast, aerial nesting species were readily found in the loose mortar of walls and dead wood introduced into the cemetery. As a consequence, aerial nesters (Table 4, p179) are much higher than the British percentages (49.2% for solitary wasps, 17.9% for solitary bees)

5. Why species visit a site?

Since tourist species were found in all samples when the upper asymptote was reached and the Chao and Jackknife final estimates of potential species have similar value, the Archer number of solitary species would be of both residents and tourists. Only at Pollington Quarry (without tourist species) were just resident species probably recorded or estimated.

References

Archer, M.E, (1985) The wasps and bees (Hymenoptera: Aculeata) of Pompocali, near Leeds: The first 27 visits. *The Naturalist* 110: 49-51.

Archer, M.E. (1992) Aculeate wasps and bees (Hymenoptera: Aculeata) of Skipwith Common and a comparison of Skipwith Common with Allerthorpe and Strensall Commons. *The Naturalist* 117: 19-25.

Archer, M.E. & Burn, J.T. (1995) The Aculeate wasp and bees of Crow Wood, Finningley in Watsonian Yorkshire with the introduction of a new national quality scoring system. *British Journal of Entomology and Natural History* 8: 49-59.

Archer, M.E. (1995) Aculeate wasps and bees (Hymenoptera: Aculeata) of Blaxton Common in Watsonian Yorkshire with the introduction of a new national quality scoring system. *The Naturalist* 120: 21-29.

Archer, M.E, (1996) The aculeate wasps and bees (Hymenoptera: Aculeata) of Shipley Glen in Watsonian Yorkshire with a 'Then' and 'Now' comparison. *The Naturalist* 121: 53-59.

Archer, M.E, (1997) The aculeate wasps and bees (Hymenoptera: Aculeata) of two calcareous localities in Watsonian Yorkshire: Burton Leonard Lime Quarries and Cave Wold. *The Naturalist* 122:45-52.

Archer, M.E, (1999) The aculeate wasps and bees (Hymenoptera: Aculeata) of Holmehouse Wood, near Keighley, in Watsonian Yorkshire, including a Jackknife statistical procedure for estimating species richness. *The Naturalist* 124: 75-82.

Archer, M.E, (2001a) The wasps and bees (Hymenoptera: Aculeata) of the river bank at Beningbrough and Keswick Fitts in Watsonian Yorkshire. *Entomologist's Gazette* 52: 105-115.
Archer, M.E, (2001b) The wasps and bees (Hymenoptera: Aculeata) of upland sites of Brimham Rocks, Caydale, Gundale and Seckar Moor with Woolley Edge Quarry in Watsonian Yorkshire. *The Naturalist* 126: 3-15.
Archer, M.E, (2002a) The wasps and bees (Hymenoptera: Aculeata) of Station Wood, Barnby Dun and Rossington Bridge in Watsonian Yorkshire. *Sorby Record* 36: 32-42.
Archer, M.E, (2002b) The wasps and bees (Hymenoptera: Aculeata) of Cornelian and Cayton Bays and Osgodby Point in Watsonian Yorkshire. *The Naturalist* 127: 31- 38.
Archer, M.E, (2003) The wasps and bees (Hymenoptera: Aculeata) of remnant sites in intensive agricultural countryside in Watsonian Yorkshire: Brayton Barff, Ringhay Wood, South Cliffe Common and Thornton Ellers. *The Naturalist* 128: 49-59.
Archer, M.E, (2004) The wasps and bees (Hymenoptera: Aculeata) of York's Victorian Cemetery in Watsonian Yorkshire. *The Naturalist* 129:145-153.
Archer, M.E, (2005) The wasps and bees (Hymenoptera: Aculeata) of three more remnant sites in Watsonian Yorkshire: Haw Park, Stutton, and Fulford Ings, York. *The Naturalist* 130: 81-92.
Archer, M.E, (2006) The wasps and bees (Hymenoptera: Aculeata) of Pollington Quarry in Watsonian Yorkshire. *The Naturalist* 131: 67-76.
Archer, M.E. (2007) A problem arising from the study of the wasps and bees (Hymenoptera: Aculeata) of York's Victorian Cemetery. *Bulletin of the Yorkshire Naturalists' Union 47 supplement* 46-49.
Archer, M.E, (2008) Revisiting the solitary wasps and bees Hymenoptera: Aculeata) of Burton Leonard Lime Quarries and Duncombe Park in Watsonian Yorkshire. 133: 21-27.
Archer, M.E, (2009) Revisiting the solitary wasps and bees (Hymenoptera: Aculeata) of Brimham Rocks in Watsonian Yorkshire. *The Naturalist* 134: 37-41.
Archer, M.E, (2010) The wasps and bees (Hymenoptera: Aculeata) of Blaxton Common-2 in Watsonian Yorkshire. *The Naturalist* 135: 93-100.
Archer, M.E, (2011a) The Aculeate Hymenoptera (wasps, ants and bees) of the Lindrick area in Watsonian Yorkshire. *The Naturalist* 136: 39-44.
Archer, M.E, (2011b) The wasps and bees (Hym., Aculeata) of Strensall Common in Watsonian Yorkshire revisited *Entomologist's Monthly Magazine* 147: 33-42.
Archer, M.E, (2011c) The wasps and bees (Hym., Aculeata) of Thorne and Hatfield Moors in Watsonian Yorkshire *Entomologist's Monthly Magazine* 147: 177-188.
Archer, M.E, (2012) The wasps and bees (Hymenoptera: Aculeata) of Allerthorpe Common *Entomologist's Monthly Magazine* 148: 119-131.
Archer, M.E, (2013) The wasps and bees (Hymenoptera: Aculeata) of two farms, Manor and Hopewell, in Watsonian Yorkshire. *The Naturalist* 138: 144-148.
Colwell, R.K. & Coddington, J.A. (1994) Estimating terrestrial biodiversity through extrapolation. *Philosophical Transactions of the Royal Society, London B* 345: 101-118.
Heltshe, J.F. & Forrester, N.E. (1983) Estimating Species richness using the Jackknife procedure. *Biometrics* 39: 1-11.
Magurran, A.E. (1988) *Ecological diversity and its measurement*. Princeton, NJ: Princeton University Press.
Magurran, A,E. (2004) *Measuring Biological Diversity*. Oxford: Blackwell.

The St Nicks Slug Crib

Sam J. Buckton[1] (SB) and Jane Thomas[2] (JT)
[1]3 Belle Vue Cottages, Belle Vue Street, York YO10 5LY
[2]45 Lang Road, Bishopthorpe, York YO23 2QJ
Email: sjb312@cantab.ac.uk

Introduction

The slug fauna of Britain and Ireland is probably one of the best-studied in the world (Rowson *et al.*, 2014a). Nonetheless, slugs still suffer from under-recording (especially 'segregates' of closely related species) and 'newcomers to limacology invariably claim that all slugs look the same' (Rowson *et al.*, 2014b). This is unfortunate for a number of reasons:

- Slugs play important ecological roles, including as food for a wide range of animals (e.g. hedgehogs, thrushes, amphibians, slow-worms and ground beetles), recyclers of soil nutrients (Goble, 2007), dispersers of fern and bryophyte spores and lichen propagules (Boch *et al.*, 2013), and even enhancers of bryophyte diversity by feeding on vascular plants (Boch *et al.*, 2015).
- Over half of Britain's slug species are introduced non-natives, with various other non-natives at risk of introduction in the near future (Ross, 2019). Tracking the distribution of these species could be important for both ecological and socio-economic reasons.
- Some of our (at least putatively) native slug species are so poorly known in Britain, such as Spotted Keeled Slug *Tandonia rustica*, that their conservation status cannot be established even though they may be conservation priorities (Bratton, 1991; Rowson *et al.*, 2014b). More recording could be highly valuable in such cases.
- With a bit of practice, identification of the majority of British slug species is more straightforward than one might expect, and can be achieved in the field without much specialist equipment (other than a good camera) and also throughout the year, providing an enjoyable winter pastime for any naturalist when much other wildlife is scarce.

To encourage more slug recording, we present the 'St Nicks Slug Crib', an identification guide to the slugs of St Nicholas Fields Local Nature Reserve in York (colloquially referred to as 'St Nicks'). It is not intended to be a comprehensive key or guide to all British species of slugs, nor provide guidance on dissection: this can all be found in Rowson *et al.* (2014b). Rather, the Crib is a brief, simple pictorial guide with notes to help you to identify a selection of slugs (including some of Britain's most common ones) in the field or from photographs. With that said, our species descriptions will inevitably bear some similarity to those in Rowson *et al.* (2014b). The slugs found at St Nicks are likely to be representative of similar habitats (including gardens) in Yorkshire and elsewhere in Britain, making our Crib a useful 'starter kit' for further slug study. Before the Crib proper, we begin with an introduction to slug recording at St Nicks and slug recording more generally.

Slug recording at St Nicks

St Nicks is a 10ha (24-acre) site referred to as the 'green heart of York', with a wide range of habitats including scythed meadows, scrub, woodland, and Osbaldwick and Tang Hall Becks (see also Buckton, 2021 for an introduction to the reserve). Significantly for slugs, many woodland areas are littered with boulders, stone slabs, bricks and other rubble as well as rotting logs (Figure 1). A volunteer survey group ('Wildwatch') records wildlife at St Nicks from 10 am until midday every Wednesday. It has been running for around a decade but JT has been recording slugs with Wildwatch since October 2019, and enthused SB about slugs when he started with

Wildwatch later on in 2020. Slug recording at St Nicks is a particular focus during the winter months.

Figure 1. A variety of slugs and other invertebrates under a rotten log at St Nicks. There are at least five species of slug present - can you identify them? We encourage you to have a go using our Crib. If you wish to know the answers, email SB using the address provided above. (Photo: JT)

Rowson *et al.* (2014b) claim that 'One of our gardens supports 14 slug species but they have never all been seen in any 24-hour period'. St Nicks is larger than the average garden but is still a reasonably small site and we are proud of the fact that as many as 20 species of slug have been recorded here (including one semi-slug). The most we have ever found during a single Wildwatch session is 12, on 23 September 2020, and we have found as many as eight species under a single log. Indeed, St Nicks is beginning to gain recognition at least at a county level as something of a 'Mollusc Mecca', hosting 22 species of snail as well as its diverse slugs, and attracted an excursion of the Yorkshire Conchological Society in September 2021. St Nicks' more unusual slugs include the first vice-county 62 (North-east Yorkshire) record of Balkan Threeband Slug *Ambigolimax nyctelius* and the enigmatic, poorly-recorded Stella Davies' Slug *Arion* sp. "Davies". Further details on some recent notable St Nicks slug records can be found in Buckton (2021).

We may well discover new species for the site in the future: for instance, there is no convincing reason why we would not be able to find species such as Large Black Slug *Arion ater*, Hedgehog Slug *A. intermedius*, Leopard Slug *Limax maximus* and Marsh Slug *Deroceras laeve*. Others missing from our checklist include those typically associated with longer-established woodland (e.g. Ash-Black Slug *Limax cinereoniger*) and naturally rare or introduced species restricted to small areas. The reserve is rather poor for lichens, which may put off species such as Tree Slug

Lehmannia marginata. Leopard Slug may be more active nocturnally and less obvious during the daytime Wildwatch surveys, although it could still feasibly be found under logs during the day; a nocturnal Wildwatch session would nonetheless be an interesting exercise, in which case checking under compost heaps might reveal Leopard Slugs (Terry Crawford, pers. comm.).

General tips for slug recording

Before meeting JT, SB dismissed most of the slugs he saw as being a) too difficult to bother identifying, and b) being small juveniles of large slugs, but he now knows that he was (mostly) wrong on both counts. A surprising diversity of slugs can be found in even the most mundane of habitats and the majority can be identified in the field.

You are likely to see more slugs out and about in damp weather but even in high summer they can be found under debris such as logs and stones, as well as other relatively cool, dark, damp places such as compost heaps. Be sure to return any log or stone to its original position after turning it over, taking care not to squash any invertebrates in the process. In the field, take photographs and include these with your slug records, which should ideally be uploaded to iRecord (https://www.brc.ac.uk/irecord/); with good photos, many species can be verified and accepted by Chris du Feu for the national recording scheme. (There is also a Yorkshire-based recording scheme run by Adrian Norris; Adrian's records are passed on to Ben Rowson, the Honorary Non-marine Census Recorder of The Conchological Society of Great Britain & Ireland.) Both JT and SB use an Olympus Tough TG-6 with a light ring accessory (this appears to be a popular set-up for naturalists across Britain, especially as it has excellent macro capabilities and is weather-resistant). JT tends to use the photo-stacking function whereas SB prefers to use the simple microscope function - both do a good job. The light ring is especially useful in winter and for illuminating the many dark nooks and crannies where slugs congregate.

For most slugs, three views are needed for verification from photos: a view of the back, the right-hand side (where the breathing pore is) and the underside (sole). When identifying slugs yourself, there are various general things to consider. How big is it? Juveniles can be impossible to identify from appearance, so really small slugs are best passed by (see further notes on juveniles below). Are the tubercles coarse or fine? What colours are apparent on the top, sides and underside? Slugs can be remarkably variable in colour, so although colour can be a useful pointer, careful attention to other key features is often necessary. Observe if the slug has a raised keel along the back (sometimes this is very hard to see, other times obvious). Look at the colour and texture of the mucus (this may be different for the body and the sole): is it clear, coloured or milky, watery or sticky? If coloured, what colour? You can use a tissue to see the colour of the body mucus clearly; the sole mucus is normally obvious but can get washed away in wet weather. If you are intending to use a key to identify your slug, you will need to note the position of the breathing pore (towards the front or rear of the mantle). Since slugs are principally soil-dwellers and some of them like to eat faeces, don't forget to wash your hands after handling them!

As for identification resources, Brian Eversham has produced a useful online key for personal use from The Wildlife Trust for Bedfordshire, Cambridgeshire & Northamptonshire (https://www.wildlifebcn.org/wildlife/wildlife-guides, where you will also find many other useful keys). The NatureSpot website (https://www.naturespot.org.uk/) has some good photo galleries and identification notes. There is a helpful group on Facebook: 'Land & Freshwater Mollusca, Britain & Europe'. JT found this group invaluable when she was starting out on slugs. However, the bible for the slugs of Britain and Ireland is Rowson *et al.*'s (2014b) *Slugs of Britain and Ireland*, published by the FSC. It is surely one of the best guides to any taxonomic group in Britain, let alone slugs, and is filled with exceptionally good photographs.

With all that said, it is sometimes impossible to identify a slug to species level in the field or from photos. Some may require dissection and examination of the genitalia, and these are generally recorded as species aggregates (agg.) in the field. Even the experts are baffled sometimes! In particular, juvenile slugs are generally not possible to assign to a species. On the subject of juveniles, be wary that juveniles of the large *Arion* species (subgenus *Arion*) - especially Large Red Slug *A. rufus*, Green-soled Slug *A. flagellus*, Vulgar Slug *A. vulgaris* and Stella Davies' Slug - may be banded, and therefore bear some resemblance to adults of species in the subgenera *Mesarion*, *Carinarion* and *Kobeltia*. However, the banding patterns and colour (amongst other features) in adults of the latter three subgenera are still distinctive and you will soon be able to distinguish subgenus *Arion* juveniles, which are most likely to be found later in the winter and in the spring (Davies, 1987; Hutchinson, Reise & Skujienė, 2017). A small banded slug that looks 'different', possibly with coarse tubercles and a stripy foot fringe, especially around that time of year, may be a juvenile large *Arion* (Figure 2). Juveniles of other slugs vary in how closely they resemble their corresponding adult appearance, but the main thing to note is that they are very small (Figure 2).

Figure 2. A selection of juvenile slugs. All identifications were confirmed by rearing by JT. Clockwise from top left: Green-soled Slug *Arion flagellus*; Blue-black Soil Slug *Arion hortensis*; Balkan Threeband Slug *Ambigolimax nyctelius*; and Green Cellar Slug *Limacus maculatus*. (Photos: JT)

As you begin to observe slugs more closely, you may also notice small white mites running about on the surface of the slugs and entering their breathing pores. These will be the parasitic White Slug Mite *Riccardoella* (*Proriccardoella*) *oudemansi* (Figure 3, p186), which feeds on the blood of molluscs. We have found these on both slugs and snails at St Nicks. A second *Riccardoella* species, the White Snail Mite *R.* (*R.*) *limacum*, appears to be largely restricted

to snails, contrary to what was believed historically (and contrary to its species epithet!) (Zabludovskaya & Badanin, 2010); in 2021, JT found what is the first confirmed English record of this species at St Nicks on a Garden Snail *Cornu aspersum*.

Figure 3. Left: Green Cellar Slugs *Limacus maculatus* covered with White Slug Mites *Riccardoella oudemansi*. Right: a single White Slug Mite under high magnification. The mite is around 0.5mm long. (Photos: JT)

External slug anatomy

Figure 4. External slug anatomy. (Photos: JT)

There are almost no complicated new words to learn when describing external slug anatomy. Some labelled photographs are provided in Figure 4, which should be reasonably self-explanatory. Note that the 'tail' refers to all of the body apical to the mantle, not just its tip. Although not illustrated, the sole may have lines radiating inwards like continuations of stripes on the foot fringe: these are called 'fringe lines'.

The St Nicks Slug Crib

The following species are organised in the text according to Rowson *et al.* (2014b). Some of them are dealt with as groups of similar species. As well as identification pointers, we include some notes on ecology based on our observations at St Nicks. We include the names of subgenus groupings within the genus *Arion*, as these can be helpful for understanding which species are most closely related. After the species name is (in parentheses) an indicator of native/ non-native status based on Rowson *et al.* (2014b): N = native, I = introduced (non-native), ? = unclear.

Each species entry has a corresponding collage of labelled photographs created using PhotoCollage.com (https://www.photocollage.com). All photographs were taken by JT. Although these collages are not directly referenced in-text, each is titled with the slug species in question so it should be clear how they match up with the text. Many of the photographs provided are of slugs at rest; we hope that others will find this as useful as we do, as this is the posture most commonly seen in slugs found under logs and stones, but photographs in guides (e.g. Rowson *et al.*, 2014b) tend to be fully extended (e.g. moving) slugs.

ARIONIDAE (ROUNDBACK SLUGS)

Large Black Slug *Arion* (*Arion*) *ater* (N)

Large Red Slug *Arion* (*Arion*) *rufus* (N)

Having said that our Crib would demonstrate the straightforward nature of identifying many slugs, we begin with two of the trickiest species to distinguish. Nonetheless, they are easily recognised as an aggregate (*A. ater* agg.) and can in many cases be identified with reasonable confidence to species level from field characters. However, because the two species hybridise and are intraspecifically variable with colours ranging from black to yellow, dissection may be necessary to confirm the identity of many individuals; at St Nicks we often have to record these as the aggregate. We have not yet found any convincing Large Black Slugs at St Nicks but for convenience we include identification notes for both Large Black and Large Red Slugs.

Large Black Slug is a familiar large slug in Britain, often encountered gliding across paths and grassland, particularly in damp weather, with a blob of mucus on its tail. Although generally black, it can be brown or even pale yellow. In the field, it is helpful to look at the sole and foot fringe: the sole is as dark as the body or paler but never darker, with obvious fringe lines running towards and sometimes into, the centre of the sole from the edges. The foot fringe is usually striped and a darker or duller colour than the body (not bright orange as in Large Red Slug). There is a misconception held by some that only Large Black Slug displays a side-to-side rocking motion when disturbed, but Large Red Slug may also show this behaviour, but less often, less intensely and with shorter duration (Davies, 1987).

Large Red Slug is medium to large and heavily built with coarse tubercles. The colour is typically pale orangey-brown but is variable. The mucus is thick and sticky and may have an orange tinge. The foot fringe is striped and usually a brighter colour than the body. The sole is pale, never darker than the body sides; it may have dark fringe lines reaching towards the centre and there may be an orange flush particularly towards the head. At St Nicks, Large Red Slug is generally found in grassier areas, often resting on leaves of Horseradish *Armoracia rusticana*.

Green-soled Slug
Arion flagellus
Very coarse tubercles
Striped foot fringe not contrasting strongly with body sides
Sole pale olive with greenish tinge

Vulgar Slug
Arion cf. vulgaris
Often a shade of brown
Rim of breathing pore often dark
Sole pale grey with yellowish tinge
Foot fringe striped, not contrasting with body sides
Sole pale grey, may have fringe stripe

May be quite small
Coarse tubercles
Stella Davies' Slug
Arion sp. "Davies"
Foot fringe brighter than body sides
Sole normally pale but may be dark

Green-soled Slug *Arion* (*Arion*) *flagellus* (N)

A very familiar medium to large slug at St Nicks, often found resting on Horseradish leaves in the summer. The colour is variable, ranging from yellow through brown to black, although all specimens found so far at St Nicks have been shades of brown (typically light brown). The very coarse tubercles, which often look highlighted with pale brown, are a useful diagnostic feature. The mucus is thick, sticky and colourless (and very hard to remove when washing your hands after handling one). The foot fringe is striped but does not contrast strongly with the body sides

(unlike Large Red Slug). The sole is pale with no orange flush: the 'green tinge' mentioned in the literature (e.g. Rowson *et al.*, 2014b) may be subtle. The fringe lines on the sole are either absent or never reach far from the edges.

Vulgar Slug *Arion* (*Arion*) *vulgaris* (?)
Only recently found at St Nicks in the main meadow area, and yet to be confirmed by dissection, so our Vulgar Slug records should be treated with caution although they are promising candidates

based on outward appearance (we refer to this species as '*Arion* cf. *vulgaris*' in its collage to reflect this uncertainty). This species is medium to large, heavily built and superficially similar to Green-soled Slug (it has a similar colour variation, although is often a shade of brown); however, the tubercles are not as coarse and the sole is sooty grey, often darker than the body sides, with fringe lines reaching into the centre. The spaces between the tubercles are commonly sooty grey, which is not the case with Green-soled Slug. The foot fringe is striped and a similar colour to the body sides. The rim of the breathing pore is often dark. See the entry for Stella Davies' Slug for notes on similarities to Vulgar Slug.

Stella Davies' Slug *Arion* (*Arion*) sp. "Davies" (?)
A very new species to St Nicks, only recently confirmed by dissection by Ben Rowson. This slug has not yet been fully described nor given an official scientific name but there is genetic evidence that it is a distinct species, so worthy of further study (Rowson *et al.*, 2014a). Medium to large, heavily built with fairly coarse tubercles, it could be confused with a pale-soled Vulgar Slug or possibly a Large Red Slug. The body colour is variable but both individuals found so far at St Nicks were strikingly grey, which is an unusual colour but one that can occur in other large *Arion* species. The tubercles on the individuals we found were in quite neat rows, almost as if they had been combed, but this may not be a reliable feature. The sole is normally pale but may be darker than the body sides; one of our St Nicks specimens had a sooty grey sole, the other paler with an orange flush towards the head. The foot fringe is striped and a brighter colour than the body sides. Both were found moving through grassy areas of the reserve. The lack of knowledge about this species means that field characters should be rough indicators only, and dissection is still required for a definitive identification at present.

Dusky Slug *Arion* (*Mesarion*) *subfuscus* (N)
The medium-sized Dusky Slug might be confused with Tawny Soil Slug at first glance; they are both brown (although quite variable in shade) and usually have dark pigmentation down the back. However, Dusky Slug is larger than Tawny Soil Slug and has much finer tubercles, a pale sole not stained by mucus, and bright orange body mucus, sometimes to the point of making the slug look glazed with an orange syrup. This may not be obvious when the mucus is on the slug, so you need to dab the slug with a tissue or rub it gently with your thumb. Do not forget to photograph the tissue or your thumb (as well as the slug) if you are submitting your record for verification, as the mucus colour is an important diagnostic feature. The foot fringe does not contrast with the body sides and has narrow stripes. Dusky Slug appears to be unfussy in its habitat requirements at St Nicks but, like many slugs, is usually found under logs and stones.

Rusty False-keeled Slug *Arion* (*Carinarion*) *fasciatus* (I?)
Spotted False-keeled Slug *Arion* (*Carinarion*) *circumscriptus circumscriptus* (N)
Silver False-keeled Slug *Arion* (*Carinarion*) *circumscriptus silvaticus* (N)
These three slugs all have a row of paler tubercles down the centre of the back, giving the impression of a keel (a 'false keel'). They are all small with fine tubercles, colourless mucus and pale soles. Rusty False-keeled Slug is easy to separate from the other two since it is somewhat larger and a warm yellowish-brown above (as its vernacular name suggests) rather than greyish; it also has an orange or yellow pigment flush on the sides below the lateral band, which is lacking in the others. The other two (treated as subspecies of *A. circumscriptus* by Rowson *et al.*, 2014b) are harder, if not impossible to separate from each other. Indeed, there is such a spectrum of variability that the concept of two subspecies may not be useful (Chris du Feu, pers. comm.); the aggregate '*A. circumscriptus* agg.' may be recorded in uncertain cases. These two subspecies are perhaps amongst St Nicks' prettiest slugs. They are greyish with dark, well-defined lateral bands; the sole and sides are bright white; the tubercles may contain small flecks of yellowish pigment, and the mantle may display dark blotches or flecks. They are often

rather flat at rest, so the sides are visible from above. These species are usually found under logs at St Nicks.

Brown Soil Slug *Arion* (*Kobeltia*) *distinctus* (N)
Blue-black Soil Slug *Arion* (*Kobeltia*) *hortensis* (N)
These two slugs are dealt with as a pair as they are very similar - indeed, we sometimes have to record them as an aggregate ('*Arion hortensis* agg.') as they may not have clear enough features to separate. They probably do not hybridise frequently (Davies, 1977, 1979) so appear to be intraspecifically variable. They are small dark slugs with darker lateral bands and their soles coloured yellow to orange by mucus, but the mucus can wash off, so the colour may not be obvious.

Brown Soil Slug has yellow pigment cells dotted about in the tubercles on its back, which are clearly visible with a hand lens or a good photo and can make the slug look quite brown. The lateral bands are broader and lower than on Blue-black Soil Slug and run level with or below the breathing pore. The bottom row of tubercles is not contrastingly white and the sole mucus is generally paler yellow-orange than on Blue-black Soil Slug. Brown Soil Slug can also look similar to Tawny Soil Slug but has finer tubercles, darker orange sole mucus and does not have the dark pigment running along the centre of the back. The lateral bands are lower down and do not diffuse down to the foot fringe.

Blue-black Soil Slug is normally jet black or very dark, the lateral band running fairly low down on the body sides but usually passing above the breathing pore. The bottom row of tubercles on the body sides is often bright white and the sole mucus can be quite dark orange. Another way to differentiate between these two slugs is if you can clearly see the tentacles in good light: Brown Soil Slug has blue-black tentacles whereas Blue-black Soil Slug has reddish tentacles. Both are commonly found under logs, often both under the same log. If you find an aggregation of these then pick out specimens with the clearest markings to identify.

Tawny Soil Slug *Arion* (*Kobeltia*) *owenii* (N)
A small slug with coarse tubercles and dark pigment down the centre of its back. The body colour is generally a warm yellowish brown; the lateral bands are dark, broad and usually diffuse down towards the foot fringe, which is not striped. The sole is stained yellow-orange by mucus and can look very flat when the slug is picked up. This is one of the few slugs that can be easily identified as a juvenile: when defensively bunched up the juveniles are reminiscent of striped humbug sweets. At St Nicks we find Tawny Soil Slug under bricks, stones, flat pieces of wood and logs, sometimes in quite large numbers. This slug has been rarely recorded in Yorkshire and (so far) is not widespread at St Nicks, but found near two of the main paths that run through the reserve.

LIMACIDAE (KEELBACK SLUGS)
Green Cellar Slug *Limacus maculatus* (I)
A familiar slug to anyone with a compost bin, Green Cellar Slug is usually found under logs or stones, often near trees which it climbs at night. There are often large numbers tightly packed in together. A large, plump slug with relatively large, coarse tubercles, usually green with darker blotches, but they can be quite brown overall. The sole is pale. Reasonably unmistakable.

Iberian Threeband Slug *Ambigolimax valentianus* (I)
Balkan Threeband Slug *Ambigolimax nyctelius* (I)
These two are dealt with as a pair as they need care to separate. They are both small to medium-sized, pale brown with pale soles and clear mucus, and very mobile. They differ in

the overall colour and strength of their banded markings. They are generally found under logs in St Nicks' wooded areas, sometimes both species under the same log, but are widespread over the reserve. We do find some individuals whose strength of markings is intermediate, so that we cannot confidently assign them to one or the other species; these are recorded as an aggregate. Balkan Threeband Slug was confirmed initially by dissection.

Iberian Threeband Slug is medium-sized and usually a pale translucent brown, often with a pinkish tinge. The darker markings can be quite diffuse, sometimes almost absent, although

there are normally distinct dark bands at the sides of the mantle. If there are three mantle bands, the central one will be more diffuse than the others. There may be lateral bands running high on the body down the length of the tail.

Balkan Threeband Slug appears slightly smaller than Iberian Threeband Slug. It does not appear translucent and is slightly darker. The markings are usually very bold and black and there are normally three mantle bands and prominent lateral bands high on the body running down the tail. There may also be dark spots or blotches.

AGRIOLIMACIDAE

Netted Field Slug *Deroceras reticulatum* (N)

One of the commonest slugs at St Nicks and one that we can now recognise easily on sight. Quite a small slug, often found under logs. The colour is very variable: almost everything from creamy white to purplish black (see Buckton, 2021). They may have a netted appearance due to darker pigment between the tubercles. The mucus is quite watery and milky when the slug is handled, although this may not be immediately obvious. The tail often appears pinched when the slug is at rest due to the short keel. The slug is quite soft and flabby, and active when handled.

Tramp Slug *Deroceras invadens* (I)

Another common slug at St Nicks and fairly easy to recognise, it is small, often found under logs together with Netted Field Slugs. It comes in various shades of warm pinkish brown, although often appears two-toned with a darker tail and a paler, sometimes rather lumpy, mantle caused by the internal shell showing through. The rim of the breathing pore is obviously pale. The tail looks pinched as in Netted Field Slug but there is no pigment between the tubercles, although body and mantle sometimes look quite spotty. The mucus is not milky and the sole is pale. It is a very active slug (one of Britain's fastest) and will sometimes flap up and down the front of its mantle when disturbed (Terry Crawford, pers. comm.).

MILACIDAE

Budapest Keeled Slug *Tandonia budapestensis* (I)

A medium-sized slug with an obvious straight keel running the full length of the tail. The body and mantle are various shades of grey-brown densely flecked with darker pigment; the keel is dull orange and the rim of the breathing pore is not pale; the sole is pale and has a clear dark line running down the centre; the mucus is clear and very sticky. An individual near the end of its life may have quite a brown sole but the dark central line should still be obvious. We often find this slug under logs or stones, where it can be quite hard to spot, as it blends in well with the soil.

Sowerby's Keeled Slug *Tandonia sowerbyi* (I?)
Much rarer than Budapest Keeled Slug in Yorkshire (and at St Nicks), Sowerby's Keeled Slug is superficially similar, although more heavily built. A medium-sized slug with a very obvious keel running the length of the tail; the body and mantle are various shades of brown, densely flecked with darker pigment; the keel is dirty orange and often crinkled; the rim of the breathing pore is pale; the sole is pale with no dark central line and the mucus is yellowish and sticky. So far we have found this species under logs and a stone at St Nicks.

BOETTGERILLIDAE
Worm Slug *Boettgerilla pallens* (I)
A small, delicate slug that lives in the soil. Its colour ranges from very pale ivory to lavender-grey. It is a keeled slug but, from our experience, the keel is usually difficult to see. The tentacles and tail tip tend to be a slightly darker than the body; the keel area may also be darker or the same colour as the body. It is very slender when moving, almost like an earthworm, and appears smooth and somewhat translucent. We have found this species under stones but also once under an old tarpaulin. Often associated with earthworm burrows.

VITRINIDAE (GLASS SNAILS)
Winter Semi-slug *Vitrina pellucida* (N)
This tiny creature lies between the slugs and the snails: it has a very delicate external shell but the body cannot fully withdraw into it, so it is classified as a 'semi-slug'. We include it here as an 'honorary slug'. Not uncommon but hard to find due to its small size; we often see it at St Nicks in leaf litter in the winter. There are three species of semi-slug in Britain and Ireland, only one of which (the most common) has been found at St Nicks. The shell is usually greenish and there is a dark smudge around the breathing pore. The mantle is usually pale grey and has a small lobe held over the outside of the shell when the animal is moving, although there may be quite a large proportion of the shell covered by the mantle lobe when the animal is at rest.

Acknowledgements
The authors wish to thank Terry Crawford, Chris du Feu, Adrian Norris, Ben Rowson, Ian Smith and Anthony Wardhaugh for their help and encouragement in our exploration of slugs at St Nicks. We are particularly grateful to Terry Crawford for offering helpful comments on a draft of this paper. Our thanks are also due to Matthew Shepherd for guidance on slug mites.

References
Boch, S. Berlinger, M., Fischer, M., Knop, E., Nentwig, W., Türke, M. & Prati, D. (2013) Fern and bryophyte endozoochory by slugs. *Oecologia*, 172: 817-822.
Boch, S., Fischer, M., Knop, E. & Allan, E. (2015) Endozoochory by slugs can increase bryophyte establishment and species richness. *Oikos*, 124: 331-336.
Bratton, J.H. (ed.) (1991) *British Red Data Books: 3. Invertebrates other than insects*. Joint Nature Conservation Committee, Peterborough.
Buckton, S.J. (2021) Wildwatching in a pandemic: notable species found at St Nicholas Fields, York, in 2020. *The Naturalist*, 146: 96-101. (Note that this article was erroneously given the title 'St Nicholas Fields, York, in 2020' in the printed journal.)
Davies, S.M. (1977) The *Arion hortensis* complex with notes on *A. intermedius* Normand (Pulmonata: Arionidae). *Journal of Conchology*, 29: 173-187.
Davies, S.M. (1979) Segregates of the *Arion hortensis* complex (Pulmonata: Arionidae) with description of a new species, *Arion owenii*. *Journal of Conchology*, 30: 123-128.
Davies, S.M. (1987) *Arion flagellus* Collinge and *A. lusitanicus* Mabille in the British Isles. A morphological, biological and taxonomic investigation. *Journal of Conchology*, 32: 339-354.
Goble, D. (2007) What are Slugs Good for? Ecosystem Services and the Conservation of

Biodiversity. *Journal of Land Use & Environmental Law*, 22(2): 411-418.
Hutchinson, J.M.C., Reise, H. & Skujienė, G. (2017) Life cycles and adult sizes of five co-occurring species of *Arion* slugs. *Journal of Molluscan Studies*, 83(1): 88-105.
Ross, J. (2019) Potential slug invasions and their impact on UK biosecurity (Part 1). *CABI*, available at: https://blog.invasive-species.org/2019/07/19/potential-slug-invasions-and-their-impact-on-uk-biosecurity-part-1/, last accessed on 21/09/2021
Rowson, B., Anderson, R., Turner, J.A. & Symondson, W.O.C. (2014a) The Slugs of Britain and Ireland: Undetected and Undescribed Species Increase a Well-Studied, Economically Important Fauna by More Than 20%. *PLoS ONE*, 9(4): e91907.
Rowson, B., Turner, J., Anderson, R. & Symondson, B. (2014b) *Slugs of Britain and Ireland: Identification, understanding and control*. FSC Publications, Telford.
Zabludovskaya, S.A. & Badanin, I.V. (2010) The slug mite *Riccardoella* (*Proriccardoella*) *oudemansi* (Prostigmata, Ereynetidae) from Ukraine. *Vestnik zoologii*, 44(2): 163-166.

Erratum

Erratum: due to an editorial error, for which the editors sincerely apologise, the final draft of Sam Buckton's article (Volume 146 Number 1107, 96-101) was replaced in print with an earlier draft, which has stylistic differences amongst other changes, including the title. This should have read: 'Wildwatching in a pandemic: notable species found at St Nicholas Fields, York, in 2020'.

YNU Bryological Section Report for 2020

T.L. Blockeel, 9 Ashfurlong Close, Dore, Sheffield S17 3NN
email: Tblockeel@aol.com

Excursions
The sectional meetings planned for 2020 were necessarily postponed because of restrictions in force during the coronavirus pandemic.

In spite of the restrictions in place during most of 2020, recording continued at a local level, especially by Johnny Turner at Hebden Bridge and Gordon Haycock in Wharfedale. Johnny added two more epiphytes to the long list that he has made in Upper Calderdale in recent years. One was *Neckera pumila*, which has always been rare in Yorkshire and was almost eliminated by SO_2 pollution during the industrial era but is slowly recolonising lost ground, having been found recently in adjacent counties (S. Lancashire, Derbyshire). This is the first record for VC63. His second epiphyte is *Orthotrichum rupestre*, which has long been known as a rupestral moss in the mountainous parts of Britain but has appeared recently on trees in scattered localities in lowland regions, like several other new and rare *Orthotrichum* species during the past two decades. Another exceptional epiphyte was discovered by Ambroise Baker among specimens that he had collected at Ruskin Park in Sheffield in 2016. It is *Orthotrichum obtusifolium*, always a rare moss in Britain and recorded a few times in North Yorkshire (VC65) in the 19th and early

20th centuries. Ambroise's record is the first in Yorkshire since 1915.

Molecular sequencing has brought about numerous taxonomic changes in recent years, often leading to the splitting of familiar species. *Sphagnum magellanicum* used to be one of our most easily-recognised bog-mosses but European material is now thought to consist of two species, *Sphagnum medium* and *S. divinum*, with subtle morphological distinctions. *Sphagnum medium* is probably the commoner of the two but their respective distributions in Yorkshire remain to be established. *S. medium* has been confirmed from Malham Tarn (Hill, 2020) and Steven Heathcote recorded it last year at Stopes Moss (VC65). Much more surprising, however, was his discovery of it on post-industrial land at Cromwell Bottom near Brighouse (VC63). In its former aggregate sense, *S. magellanicum* is an uncommon species of wet peat-bog, so this is a very unusual instance of it colonising a secondary habitat. The second segregate, *S. divinum*, was found by Gordon Haycock in a wet mire in an opening in conifer forest at Stainburn (VC64), the first confirmed Yorkshire record.

Dicranella howei has recently been confirmed in Britain as distinct from *D. varia* (Blockeel, 2020). It has a more southerly distribution in Europe than *D. varia*, being common in the Mediterranean region, but it extends north to Yorkshire and may prove to be widespread, at least in the warmer areas. Both species occur on soil in open habitats, and the one confirmed record of *D. howei* in Yorkshire to date is from a stubble field near Wintersett (VC63).

The list below provides details of these and other selected records, including all new vice-county records and updates to the national Census Catalogue (identified by an asterisk). The vice-county is given in brackets before each individual record.

The year's records

Nomenclature follows the current British Checklist and Census Catalogue (Hill *et al*., 2008). The number of records received in 2020 from each of the Watsonian vice-counties is shown below.

Vice-county	Records received
61	55
62	81
63	946
64	1974
65	76

Bazzania trilobata: (64) SE06266734 in abundance, sheltered in crag with small Rowan, Great Wolfrey Crag, Gordon Haycock, 27 May 2020. Typically a liverwort of woodland in upland regions, very scarce in Yorkshire, occasionally persisting in bouldery ground on moorland.

Bryum gemmiferum: (63) SE51041740 Arable field, Brockadale, Steven Heathcote, 5 January 2020; (63). A moss of disturbed soil, rather scarce in Yorkshire but probably under-recorded.

Calliergon cordifolium: (63) SE13092247 Cromwell Bottom NR, Steven Heathcote, 7 October 2020. An interesting instance of colonisation of a post-industrial site by this moss of wet woodland and marsh.

Calliergon giganteum: (64) SD85307441 Plover Hill, Gordon Haycock, 27 November 2020. A

rare moss of calcareous mires.

Campylium protensum: (61) SE9182937113, SE9181937118 Two distinct populations, North Newbald Becksies , Sam Buckton, 21 February 2020. A new record for this SSSI, important for its base-rich flushes.

Cladopodiella fluitans: (65) SD69318962 Rise Hill, Steven Heathcote, 18 September 2020. A scarce liverwort of wet peatlands with surprisingly few Yorkshire records.

Dicranella howei: (63*) SE3715 on clay soil in stubble field, Wintersett Reservoir, Tom Blockeel, 4 December 2002.

Didymodon icmadophilus: (63) SE0026 Near Mytholmroyd, Johnny Turner, 2020. Formerly recorded under the name *Didymodon acutus*, this moss is becoming increasingly common in ruderal habitats.

Fissidens exilis: (63) SD9927 Hebden Bridge, Johnny Turner, 2020. The first recent record of this tiny moss in Upper Calderdale.

Fissidens incurvus: (62) SE616519 St Nicholas Fields, York, in several places. e.g. north side of Tang Hall Beck, Sam Buckton, 30 December 2020. Though frequent in southern England, this moss is surprisingly rare in Yorkshire.

Gyroweisia tenuis: (63) SD9926 wall, Hebden Bridge railway station, Johnny Turner, 2020. Primarily a lowland species often found on walls of base-rich sandstone, rare in Pennine areas.

Hennediella stanfordensis: (62) SE616519 South bank of Tang Hall Beck, St Nicholas Fields, Sam Buckton, 29 October 2020. This moss, a presumed introduction, was first found in York in 1984 in the Museum Gardens but had not been re-found since. There are no other known localities in the vice-county.

Kurzia sylvatica: (63) SD9827 Colden Clough, Hebden Bridge, Johnny Turner, 2020. This very scarce liverwort of peaty soil among rocks or on moorland is known only from the Hebden Bridge area in VC63, first found there at High Greenwood in 1978.

Leptodontium flexifolium: (63) SK1697 thin layer of peat on small boulder under Bracken, Stainery Clough, Upper Derwent Valley, Tom Blockeel, 11 November 2020; (63) SD9827 Hebden Bridge, Johnny Turner, 2020. This distinctive moss of peaty soil is sparsely recorded in VC63.

Neckera pumila: (63*) SE00122637 on trunk of young Ash in woodland near Mytholmroyd, Johnny Turner, 8 February 2020.

Orthothecium intricatum: (63) SD9827 calcareous gritstone, Colden Clough, Hebden Bridge, Johnny Turner, 2020. Confirmation of an old record at Heptonstall by John Nowell, as reported in the *Supplement to Baines' Flora* in 1854. This species normally occurs on limestone formations.

Orthotrichum obtusifolium: (63*) SK337885 on bark of ornamental poplar, Ruskin Park, Sheffield, Ambroise Baker, 10 January 2016.

Orthotrichum rupestre: (63*) SD99482700 single tuft on Sycamore trunk, Hebden Bridge, Johnny Turner, 27 January 2020.

Orthotrichum tenellum: (62) SE61325198 on fallen willow by cycle path, St Nicholas Fields, Sam Buckton, 6 January 2021. Apparently only the second recent record of this epiphyte in VC62.

Pedinophyllum interruptum: (64) SE04806218 Barben Beck, Gordon Haycock, 6 November 2020. This is a new locality for this rare calcicole. although it is recorded from Trollers Gill nearby. It is almost confined in Britain to the Pennine limestones.

Physcomitrium pyriforme: (63) SE12812232 Cromwell Bottom NR, Steven Heathcote,

7 October 2020. A scarce and perhaps declining moss of bare muddy ground.

Pohlia annotina: (61) TA22784391 Fairly common along sandy strip at base of slope protected from erosion by boulders, Mappleton Sands, Steven Heathcote, 20 December 2020. This is the second recent record in VC61 of this colonist of base-poor, open ground, both records being from coastal sites.

Polytrichastrum longisetum: (63) SK1696 on bare peat, Stainery Clough, Tom Blockeel, 11 November 2020. A moss of bare and somewhat disturbed peaty soils. Most recent records in VC63 are from the peatlands in the east of the vice-county.

Pseudoleskeella catenulata: (64) SD872638 and SD867638 near top of dry-stone wall, Pennine Bridleway, ca 2.5km west of Malham Cove, Tamsin Candeland, 7 March 2020. A new locality for this rare moss. It has long been known from the high limestone crags of Ingleborough and Pen-y-ghent, but is rarely recorded on walls.

Riccardia palmata: (64) SE04976179,SE04846210 Barben Beck, Gordon Haycock, 6 November 2020; (65) SD69078964 on decaying *Sphagnum* with other bog liverworts, Stopes Moss, Steven Heathcote, 17 September 2020. Never common in Yorkshire, this liverwort of organic substrates, especially rotting wood, has become more frequent in recent years.

Schistostega pennata: (64) SE00106031 and SD99896029 in Badger sett entrances, Threapland Fell, Gordon Haycock, 5 September 2020. This is the famous luminous moss with specialised cells that reflect light and appear to glow in the holes and recesses where it typically occurs.

Sphagnum angustifolium: (64) SE05944816 Brown Bank Marsh LWS (also known as Sea Moor Tarn), Gordon Haycock & Mark Penny, 16 October 2020. Not an easy species to detect in the field, this *Sphagnum* remains under-recorded in Yorkshire.

Sphagnum compactum: (65) SD68978942 Rise Hill, Steven Heathcote, 18 September 2020. This *Sphagnum* is also little recorded in Yorkshire, but perhaps genuinely infrequent.

Sphagnum divinum: (64*) SE22095169, SE22065167 Stainburn Forest, Gordon Haycock, 13 November 2020.

Sphagnum girgensohnii: (63) SK1696 Stainery Clough, Tom Blockeel, 11 November 2020. A second record for this *Sphagnum* in the upper Derwent catchment in VC63.

Sphagnum medium: (63*) SE13292265 Cromwell Bottom NR, Steven Heathcote, 7 October 2020; (65*) SD69088959 Small hummocks mixed with *S. palustre* and *Polytrichum strictum*, Stopes Moss, Steven Heathcote, 17 September 2020.

Syntrichia laevipila: (63) SE0026 Near Mytholmroyd, Johnny Turner, 2020; (63) SD9926 Hebden Bridge, Johnny Turner, 2020. This epiphyte has been slow to re-colonise lost ground since reductions in SO_2 pollution and this is the first record for the Pennine part of VC63.

Syntrichia ruralis* var. *ruraliformis: (61) TA22784390 sandy ground behind rock defence, Mappleton Sands, Steven Heathcote, 20 December 2020; (64) SE16744692 Greenholme Mills on asbestos roof, Gordon Haycock, 5 January 2020. Long known from sand dunes, this moss has become increasingly common inland in recent years.

Syntrichia virescens (62*): SE61695180 edge of tarmac path, St Nicholas Fields, 28 October 2020, Sam Buckton; (63) SD9827 Hebden Bridge, Johnny Turner, 2020. Surprisingly not recorded previously in VC62, this moss has become widespread in recent decades on old tarmac and occasionally as an epiphyte.

Trichocolea tomentella: (62) SE564854 a single, fairly small population on the bank beside the stream., Ashberry, Sam Buckton, 19 March 2020. A new locality for this rare and highly distinctive liverwort. It was not found during the Bryological Section meeting at

Ashberry in 2012.

Tritomaria exsectiformis: (63) SK16319724 thin layer of peat on small boulder under Bracken, Stainery Clough, Tom Blockeel, 11 November 2020. There are surprisingly few records of this scarce liverwort in VC63.

Thanks are due to all the contributors of records.

References

Blockeel, T.L. (2020) *Dicranella howei* in Britain. *Field Bryology* 124: 16–21.

Hill, M.O. (2020) *Sphagnum medium* and *Sphagnum divinum* in Britain and Ireland. *Field Bryology* 123: 10–15.

Hill M.O., Blackstock T.H., Long D.G. & Rothero, G.P. (2008) *A checklist and census catalogue of British and Irish bryophyte, updated 2008.* British Bryological Society: Middlewich.

Historical note: more on the Water Voles of Read's Island

Richard Shillaker

Email: dick@islay.karoo.co.uk

Introduction

Read's Island is a low-lying, small island close to the northern Lincolnshire shoreline near South Ferriby, in the upper Humber estuary. Howes (2020) suggests that the island might have developed from a sand bank, South Ferybye Sand, that appears on a 1699 plan of the Humber by Thomas Surbey. Further silt deposition, as well as significant erosion, has determined the size of the island, which has changed over time.

The island was purchased by the Humber Conservancy from the Crown Estate in 1871. In 1957 it was bought by Sir Joseph Nickerson (after leasing it since 1953). Following his death ownership passed to the Joseph Nickerson Charitable Foundation, the current owner. Since 1996 Read's Island has been leased to the RSPB, which manages it as a nature reserve. This was initially in collaboration with the Lincolnshire Wildlife Trust which had already been involved with conservation management of the island for several years. Read's Island, which was much larger in the past, currently has about 25 acres above mean high tide level. Recent changes in the pattern of silt deposition in the estuary resulted in the formation of a mud bank connecting the island to the north Lincolnshire shore. Connection was first apparent at low tide in about 2017 or 2018 but now the link has become more substantial and vegetated.

The Water Voles *Arvicola amphibius* of Read's Island are of particular ecological interest because they have been reported to show terrestrial mole-like behaviour (Southern & Crowcroft, 1956). This is in contrast to most current reports of Water Voles in the UK where a close association with freshwater is noted. Water Voles are well known for burrowing into the banks of watercourses but can be found in a wide range of other wetland habitats (Jefferies, 2003). For instance, they have been reported to form nests in reed beds (Bright & Carter, 2000) and to burrow into

cotton grass tussocks (Hammond, 2017). Another notable feature of the Water Voles of Read's Island is that they appear to show a closer genetic relationship with Water Voles collected over the last 100 years from Scotland than from England (Brace *et al.,* 2016).

This note is intended to add to the historical evidence assembled by Howes (*loc. cit*.) for the presence of Water Voles on Read's Island. It should be noted that Howes refers to the species as *Arvicola terrestris*, which is a former name for the Water Vole in the UK and northern Europe (Brace *et al., loc.cit*.). Some of the additional information in this note comes from sources cited by Howes. Recollections of people who have lived on or visited the island are also included. Dave Mouncey, who has been associated with the island for many years and was familiar with Water Voles and other wildlife, provided some particularly useful information.

1890-1910

Howes included information about a plague of 'rats' (later identified as Water Voles) on the island in 1896 and provided details of control measures taken, including a February shooting party. A report by one in the shooting party (Payne-Gallwey, 1896) refers to their quarry as being common water rats (i.e. Water Voles) and that within the space of four years they had markedly reduced the amount of pasture available for sheep and cattle. Although Payne-Gallwey does not explicitly state that the 'water rats' exhibited terrestrial mole-like behaviour, a number of his observations are consistent with such a lifestyle. Notably there is no mention of any association with freshwater. He described the entire island as being "rough as a ploughed field from the excavated earth thrown out of their burrows" and that their "burrows and underground runs are only a few inches below the soil"; he also noted that the burrows had "ample stores of roots".

Howes provided details of six Water Voles collected by the February shooting party which were presented to the Natural History Museum in London. There is also a record held at the Lincolnshire Environmental Records Centre of a Water Vole from Read's Island, apparently collected in 1906, which was presented to the County Museum.

An additional reference to 1896 is mentioned by Kew (1929) who reported that Richard Golding, a Lincolnshire naturalist, visited the island that year to see the vast number of Water Voles. It is not clear if Golding was a member of the February shooting party or visited on a separate occasion.

1950-1960

In 1954 Ferrets *Mustela putorius furo* were brought onto the island to control a plague of 'voles' (Chapman, 1997). The 'voles' were presumably Water Voles because a Ferret would be too big to enter the burrow of a Field Vole *Microtus agrestis* or Bank Vole *Myodes glareolus*. Chapman is probably referring to a local man who Dave Mouncey noted went ferreting on the island in the 1950s. The intention would not have been to release the Ferrets to 'run wild' on the island but to take them back home at the end of a day's ferreting.

The report by Southern & Crowcroft (*loc.cit.*) of Water Voles burrowing like Moles *Talpa europaea* on Read's Island is mentioned briefly by Howes. Additional details from their report are given below, together with information about the specimens deposited by Crowcroft at the Natural History Museum in London.

In the spring of 1955 Water Vole numbers had built up sufficiently to make the Humber Conservancy Board concerned about damage to the island's protective embankment. By September of that year, the family resident on the island considered that vole numbers had decreased, although Southern & Crowcroft reported the following evidence of a "remarkable" amount of terrestrial Water Vole activity (again there is no mention of any association with freshwater):

"The embankment was riddled with holes" and a considerable proportion showed signs of recent activity. In six 50-yard sections of the embankment, there were 44-71 holes/section, with more holes on the landward side than the river side, and 31-80% showed signs of recent activity (fresh earth). On the flat pasture there were also "considerable buries" with fewer surface holes than in the embankment but with "numerous heaps of earth thrown up giving the superficial appearance of mole tunnels and heaps." Fresh droppings were also noted at the burrow entrances. In an area of a field with long grass there were root-level tunnels. These tunnels sometimes came to the surface and formed rat-like paths in the grass, leading to open areas devoid of burrows; this indicated that the voles were foraging in the field. Noting that Read's Island was devoid of Rabbits *Oryctolagus cuniculus* and Moles, and until recently was also devoid of rats, they considered that the Water Voles were living in a similar way to these terrestrial species and were benefiting from their absence.

In spite of the evidence of a flourishing Water Vole population, Southern and Crowcroft only saw two live individuals and one that had been freshly killed by a Kestrel *Falco tinnunculus*.

Crowcroft subsequently obtained fifteen Water Voles (both sexes) from Read's Island and presented them in 1960 to the Natural History Museum in London. No information has been obtained for the date the specimens were collected on the island. One of the specimens (1960.2105), a male, was used in a DNA study by Brace *et al.* (*loc. cit.*) which is referred to in the discussion below. It is also noted that there is a brief mention in a book by Fitter (1959) of Water Voles on Read's Island occupying dry habitats as in some parts of Europe. However, in the absence of further information, no particular importance can be placed on this reference.

1960-1990

Dave Mouncey from South Ferriby visited Read's Island several times over this period. In conversations with Pete Short (local RSPB warden) and me, he recalled seeing Water Voles at the western end of the island associated with freshwater and 'soft rushes'. This area used to be flooded with freshwater from a bore hole to attract Widgeon *Anas penelope* for Joseph Nickerson's shooting parties. Dave remembered seeing Water Vole burrows in the sides of dykes and flood banks but never noted any evidence of 'molehills'. Howes refers to Dave Mouncey's recollections of poison being laid in the 1960s to reduce burrowing into the embankments by rodents that Dave perceived to be Brown Rats *Rattus norvegicus* and Water Voles.

Information suggesting the presence of Water Voles has also been provided by people who lived on the island. Dorothy Chapman, who Howes noted had lived on the island from 1969 to 1986, reported the presence of hugely abundant 'rats'. Howes considered that her observations of their "gorgeous" fur and behaviour suggested that they might have been Water Voles.

I have spoken with Les Burbidge who, with his wife, were the last people to live permanently

on the island (for four years from 1986). He managed the island for the owner, Sir Joseph Nickerson, and was particularly busy building up the flood banks following the flood of 1987. It is notable that Les does not consider rodents to have been a problem for the flood defences, or more generally on the island, and there was no attempt to control their numbers at that time. "Ordinary rats" were hardly ever noted near the house but what he called "furry water rats" could be seen swimming in the freshwater dyke in the Deer Field or out on the banks of the dyke. The deer cover field was higher than the adjacent house field and the dyke nearly always contained water. It is notable that Les remembers seeing large 'molehills' near the dyke but not elsewhere in the fields. These observations suggest that fossorial Water Voles were still present on the island.

From 1990

According to Dave Mouncey, there were Water Voles on the island in the early 1990's. However, there have been no further reports since then. Pete Short has visited the island several times since 1998 but has never seen signs of Water Voles, including during his most recent visit in the late summer of 2019 when he had a good search for the voles (water vole rafts were not deployed).

Discussion

Southern & Crowcroft (*loc.cit*.) came to the clear conclusion that they found evidence of Water Voles exhibiting terrestrial mole-like behaviour on Read's Island in 1955. More limited observations consistent with this conclusion are provided by Payne-Gallwey in 1896 and Les Burbidge in the 1980s. A mole-like (fossorial) life style is considered, based on an examination of skeletal remains, to have been common amongst Water Voles in the UK in prehistoric times (Jefferies, *loc.cit*., citing the work of Montgomery, 1975). Smaller individuals (based on skull size) with more protruding (pro-odont) incisors, which would facilitate prolonged burrowing, were regarded as fossorial. These morphological features are also shown by extant populations of fossorial Water Voles in parts of continental Europe, e.g. in dry upland grasslands of the Massif Central area of France (Jefferies, *loc. cit*). Body lengths, excluding tail, for individuals collected from Read's Island in 1896 (4 males 185-207mm, 2 females 190-194mm, see Howes, *loc. cit*.) are however comparable to body lengths cited for current UK populations (140-220mm, see The Mammal Society's Water Vole Factsheet). In a recent study of fossorial Water Voles from Glasgow (a population discussed further below) mean body mass was lower than expected for UK Water Voles but, unfortunately, the study design did not permit a firm conclusion on this aspect (Stewart *et al.,* 2018).

Water Voles in the UK are now reported to be mainly associated with freshwater habitats, with the terrestrial/fossorial lifestyle only known from a few locations since the 18th century. Cooper (2021) cites a number of historical reports of Water Voles being found away from water but stresses caution in drawing conclusions because of a) the potential for species misidentification and b) whether some sightings were of dispersing individuals from an established water-associated population. Evidence cited by Cooper for established fossorial populations includes the large number of Water Voles reported by Hardy (1890) in cattle fields at Shawdon Hall, Northumberland; the Water Voles also apparently occupied "much of the sward" of Shawdon Wood and subsequently spread into neighbouring pastures. In a report of the mammals of Spurn Peninsula cited by Cooper, Clegg (1965) concluded that Water Voles were more terrestrial than normal at two Kilnsea Warren ponds which mostly dried out during the summer.

The most recent observations of fossorial behaviour in the UK are from Scotland. Water Voles showing fossorial behaviour have been recorded on small islands in the Sound of Jura, Argyll, in the 1960s and 1990s with evidence of their presence in meadows, bracken and heather (Corbet, *et al.* 1970, Telfer, *et al.* 2003). In 2008 Water Voles were found living in dry grassland in the East End of Glasgow. A subsequent investigation (Stewart, 2015) concluded that grassland in this part of Glasgow appeared to support two ecologically distinct populations of Water Voles: one within 150m of riparian habitat using grassland for feeding and dispersal and one existing independently of water and using grassland for breeding. Another fossorial population has recently been found in a park in the West End of the city (McInerny, 2021). The findings in Scotland, and that of Clegg (*loc. cit.*), are examples of the potential for flexibility in habitat suitability for Water Vole populations.

The terrestrial behaviour of the Water Voles on Read's Island would appear not to be related to limited availability of freshwater because in the past the island had enough freshwater to support large numbers of livestock and subsequently numerous Fallow Deer *Dama dama*. It should be noted that the surrounding estuary water is of low salinity, with values varying depending on the state of the tides and amount of freshwater flowing into the Humber from two major rivers (Ouse and Trent) slightly upstream of Read's Island. Stewart (*loc. cit.*) proposed that the occupation of dry grassland by Water Voles in Glasgow was in response to predation pressure by American Mink *Neovison vison* in neighbouring riparian habitat. This cannot be the original reason for Water Voles exhibiting fossorial behaviour on Read's Island because the earliest evidence for this behaviour (1896) predates the arrival of American Mink in the UK; they were first imported into the UK for fur farming in 1929 (Macdonald and Harrington, 2003). It is possible, however, as proposed by Southern and Crowcroft (*loc. cit.*), that in the reported absence of Rabbits and Moles on Read's Island, Water Voles adapted their behaviour to occupy these vacant niches.

An investigation into the DNA profile of ancient and modern Water Voles in Britain has revealed interesting features about the Read's Island population (Brace *et al., loc.cit.*). Analysis of mitochondrial DNA from a Water Vole (1960.2105) collected from the island between 1955 and 1960 showed a closer genetic relationship with Water Voles collected over the last c.100 years from Scotland than from England. In addition, the DNA profile of Water Vole material dating back to prehistoric times indicates that the Read's Island Water Voles are related to an older lineage (Clade 1) than Water Voles collected from other parts of England over the last 100 years (Clade 2). Brace *et al.* suggest that Britain was originally colonised by Water Voles of Clade 1, with the subsequent arrival of Clade 2 replacing the original colonizers in England, leaving Water Voles of Clade 1 restricted to Scotland.

A particularly intriguing question is the origin of the Read's Island Water Voles. Howes (*loc. cit.*) proposed that the island developed from a sandbank in the 17th century and therefore suggested that the Water Voles originated either from a local relic Clade 1 population which subsequently occupied the island or from a ship carrying agricultural produce from Scotland which foundered in the Humber. Notably, Howes drew attention to an undated historical report of fossorial Water Voles at Caistor in Lincolnshire (R.A. Davis, unpubl., cited by Corbet & Southern, 1964) which is only about 15 miles from Read's Island.

Since the early 1990s there have been no reported signs of Water Vole activity on Read's Island.

Pete Short, one of the few people with natural history knowledge to have visited the island during this period, has never found evidence of Water Voles, including during a specific search for signs in the late summer of 2019. He considers that if there are still any Water Voles on the island the population must be very small. This decrease in the Water Vole population is probably related, at least in part, to the loss of previously occupied pasture grassland and flood banks following extensive erosion of the island by the tidal Humber. The nature of the grassland would also have been affected by the associated inundation with brackish water, the removal of grazing livestock and the extensive culling of the resident Fallow Deer. In addition, there have been major groundworks organised by the RSPB to create brackish lagoons (salinity 8-15 parts per thousand, Pete Short, *pers. comm.*). Pete Short notes that the grassland had mostly disappeared and the remaining areas had become 'rough' before the groundworks started. Some 17 hectares of lagoons, principally for Avocets *Recurvirostra avosetta*, were first created in 1997. Then, following extensive erosion of their northern banks and part of the island, 7 hectares of lagoons were restored in 2009. A large reduction in grassland, including the apparent replacement of House Field by a lagoon and Deer Field by marsh, is indicated by comparing aerial photographs of the island dated c.1986 and 2010 (not reproduced here for quality and copyright reasons). There are, however, extensive beds of Common Reed *Phragmites australis* and Sea Club-rush *Bolboschoenus maritimus* on the island which Water Voles will exploit at other locations; they are known to nest in freshwater reed beds (Bright & Carter, *loc. cit.)* and to eat Sea Club-rush at saline locations, e.g. on the Isle of Sheppey (D Gow, *pers. comm*.). It is possible that there might be Water Voles in the reed beds on Read's Island but the voles have gone undetected because of the nature of the habitat.

Predation by birds such as Short-eared Owls *Asio flammeus* (several pairs bred on the island in the past) would be expected to have been significant when Water Voles were abundant (during and following 'plague years'). Predation by American Mink might also have had an impact following their escape and release from fur farms.

Although I am not aware of any records of American Mink on Read's Island, there is currently a significant population in the adjacent area of northern Lincolnshire (Pete Short and Simon Wellock, *pers. comm.*), with several records for the period 2000-2013 from around Ferriby Sluice, which is nearly opposite the island (Lincolnshire Environmental Records Centre records). Only a few sightings of escaped American Mink were noted in the Lincolnshire Naturalists' Union mammal survey of 1975-78 and no location details were provided (Johnson, 1982). Dave Mouncey, who used to be a professional eel fisherman, however, recalls seeing American Mink regularly in northern Lincolnshire in the late 1970s/early 1980s. He considers their appearance to be associated with the intentional release of mink from a Selby fur farm in the late 1960s (a mink farm was present at Riccall near Selby in 1963, see Howes, 2009). Dave's recollections are consistent with the observations of Govett (1966) who noted that the most dramatic change in the animal life of Yorkshire recently had been the eruption of American Mink in the last few years and especially in 1965. As American Mink are amphibious with partially webbed toes it is likely that they could have swum across the channel between the mainland and Read's Island and may, therefore, have had an impact on the Water Vole population. It is relevant that on islands in the Sound of Jura there are records of mink from many of the islands, including at least one occupied by Water Voles (Telfer *et. al., loc cit.*). It was considered probable that mink visited most of the Water Vole islands yet, despite this, the Water Vole populations continued to thrive. However, the suggestion that mink predation may have less of an effect on fossorial

than riparian populations of Water Voles was noted to need further study.

The formation of a mud bank connecting Read's Island to the northern Lincolnshire shore, first apparent in 2017/2018, will have facilitated access by American Mink as well as other mammalian predators such as Fox *Vulpes vulpes* and Badger *Meles meles*. Indeed, Foxes, which have been proposed as a significant predator of fossorial Water Voles in Glasgow (Stewart, *loc. cit.*), have been on the island for over two years (Pete Short, *pers. comm*.). However, by this time the Water Vole population was probably already severely depleted.

Other factors which one can speculate on might have contributed to the apparent decline in the Water Vole population of Read's Island include changes in the amount of available freshwater and the potential negative consequences of inbreeding, e.g. increased susceptibility to disease and possibly a reduced ability to adapt to habitat alteration.

Suggestions for further work

1) Investigate other potential sources of historical information about Read's Island and its Water Voles, e.g. at The Joseph Nickerson Memorial Gallery and archived documents of the Humber Conservancy Board.
2) Conduct further morphological and DNA studies of museum specimens of Water Voles from Read's Island: examine the incisors, obtain more body size measurements, and investigate the DNA profile of specimens collected in 1896. Also try to locate the specimen collected in 1906.
3) Investigate the DNA profile of Water Voles from northern Lincolnshire, especially around Caistor and search for evidence of any fossorial populations.
4) Conduct a definitive survey, including the use of trail cameras and rafts, for the presence of Water Voles and American Mink on Read's Island and on Whitton Sands, a nearby island in the Humber (both are RSPB reserves).

Conclusions

There is definite historical proof of Water Voles on Read's Island with evidence of their presence up to the early 1990s. Particularly notable are reports of their numbers increasing to 'plague' proportions and evidence from recognised experts of a fossorial lifestyle in grassland. However, there are also reports of Water Voles being associated with freshwater on the island. Although Read's Island has been visited very infrequently in recent years, the lack of recent reports of Water Voles is probably related, at least in part, to the loss of previously exploited habitat following extensive erosion by the tidal Humber. Predation by American Mink is also a plausible contributory reason for the lack of recent sightings of Water Voles on the island. Water Voles may however be living undetected in the reed beds.

Acknowledgements

I wish to thank Colin Howes for encouraging me to write this update to his detailed account of Read's Island and its Water Voles. Pete Short (RSPB) and Dave Mouncey have been particularly helpful by responding to numerous questions. The information received from Les Burbidge, Derek Gow, Paddy Shillington (The Joseph Nickerson Memorial Gallery), Bill Emms (The Joseph Nickerson Charitable Foundation), Charlie Barnes (Lincolnshire Environmental Records Centre), Clare Langrick (North and East Yorkshire Ecologicial Data Centre), Simon Wellock (Lincolnshire Wildlife Trust) as well as Roberto Miguez, Laura Brown and Kathryn Rooke (Natural History

Museum, London) is much appreciated. Thanks are also due to Africa Gómez for commenting on earlier drafts of this paper, and to the anonymous peer reviewer for suggesting improvements to the text.

References

Brace, S., Ruddy, M., Miller, R., Schreve, D.C., Stewart, J.R. & Barnes I. (2016) The colonization history of British Water Vole (*Arvicola amphibious* (Linnaeus, 1758)): origins and development of the Celtic fringe, *Proceedings of the Royal Society B: Biological Sciences*, 283: 20160130, http://dx.dio.org/10.1098/rspb.2016.0130.

Bright, P. & Carter, S. (2000) Halting the decline: refuges and national key sites for Water Voles, *English Nature Research Report* No. 386.

Chapman, P. (1997) Island revival, *Grimsby Evening Telegraph*, Saturday 20th September.

Clegg, T.M. (1965) Mammals on the Spurn Peninsula, *The Naturalist*, Number 894: 87-90.

Cooper, P. (2021) Vole out of water: a history of terrestrial Water Voles in Britain, *British Wildlife*, 32(7): 469-476.

Corbet, G.B. & Southern, H. N. (1964) *The Handbook of British Mammals,* 2nd edition, Blackwell Scientific Publications, Oxford.

Corbet, G.B., Cummins, J., Hedges, S.R. & Krazanowski, W. (1970) The taxonomic status of British water voles, genus *Arvicola, Journal of Zoology, London,* 161: 301-316 (cited by Telfer *et al*., 2003).

Fitter, R.S.R. (1959) *The Ark in our Midst,* Collins, London.

Govett, J.R. (1966) Mammals, Reptiles, Amphibians and Fishes. Yorkshire Naturalists' Union: Annual Report for 1965, *The Naturalist*, 896: 7-12.

Hammond, M. (2017) Water Voles, *Arvicola amphibious*, on the Humberhead Peatlands National Nature Reserve, *Thorne & Hatfield Moors Papers*, 10: 37-44.

Hardy, J. (1890) Report of the meetings of the Berwickshire Naturalists' Club, for the year 1888, *History of the Berwickshire Naturalists' Club 1887-1889*, Part II: 167-220.

Howes, C.A. (2009) Changes in the status and distribution of mammals of the order Carnivora in Yorkshire from 1600, PhD Thesis, University of Bradford.

Howes, C. A. (2020) The Saga of Read's Island and the Mystery of its Fossorial Water Voles, *The Naturalist,* 145: 94-108.

Jefferies, D.J. (2003) The aquatic and fossorial forms of the water vole, their history, evolution, morphology and ecology pp 14-21 In: *The water vole and mink survey of Britain 1996-1998 with a history of the long term changes in the status of both species and their causes,* Jefferies D.J. (ed). The Vincent Wildlife Trust, Ledbury, UK.

Johnson, M. (1982) Atlas of the mammals, reptiles and amphibians of Lincolnshire and South Humberside, *Lincolnshire Natural History Brochure number 9*, Lincolnshire Naturalists' Union.

Kew, H. W. (1929) In Memoriam: Richard William Golding, *Lincolnshire Naturalist Transactions,* 7: 91-98.

Macdonald, D.W. & Harrington, L.A. (2003) The American mink: The triumph and tragedy of adaptation out of context, *New Zealand Journal of Zoology*, 30: 4, 421-441, DOI: 10.1080/03014223.2003.9518350

McInerny, J.C. (2021) Expansion in recorded range of fossorial water voles in Glasgow, Scotland, *The Glasgow Naturalist,* 27: 114-116.

Montgomery, W.I. (1975) On the relationship between sub-fossil and recent British water voles, *Mammal Review* , 5: 23-29 (cited by Jefferies, 2003).

Payne-Gallwey, Sir R. (1896) *The Field,* 22 Feb: 294.

Southern, H.N. & Crowcroft, W.P. (1956) Terrestrial habits of the water vole (*Arvicola amphibius*), *Proceedings of the Zoological Society of London,* 126: 166-167.

Stewart, R.A. (2015) *The Ecology of Water Vole (Arvicola amphibius) in Grassland Habitats in the City of Glasgow*, MSc(R) Thesis, University of Glasgow.

Stewart, R.A., Jarret, C., White, S.A. & McCafferty, D.J. (2018) Water Vole (*Arvicola amphibius*) abundance in grassland habitats of Glasgow, *The Glasgow Naturalist,* 27: 10-19.

Telfer, S., Dallas, J.F., Aars, J., Piertney, S.B., Stewart, W.A. & Lambin, X. (2003) Demographic and genetic structure of fossorial water voles (*Arvicola terrestris*) on Scottish islands, *Journal of Zoology, London* 259: 23-29.

Henry Hewetson (1826–1909), a forgotten Yorkshire botanist

Richard Middleton
Email: richardmiddletonwawne@gmail.com

James Fraser Robinson (1857–1927), author of the Flora of the East Riding of Yorkshire (1902), made a plea for information concerning a 19th century botanist known only by the initials H.H. in *The Naturalist* for February 1927. Robinson died only a few weeks later on March 11 and it seems unlikely that he ever received a satisfactory response.

CORRESPONDENCE.

NAME OF EAST YORKSHIRE BOTANIST.

In a collection of dried plants in the possession of Mr. W. Arthur Sledge, B.Sc., Leeds, which I have been privileged to inspect, there are several specimens of East Riding plants labelled with stations near Beverley, dated in the 'forties of last century and with the collector's initials 'H.H.' and occasionally 'Beverley.' One plant, *Goodyera repens* (Orchidaceae), said to have been found at 'Houghton Wood' in 1841, has also the 'H.H.'; and it is with reference to the identity of 'H.H.' that Yorkshire botanists of the present day would be glad of information. No name in Britten's 'Alphabetical List of Deceased British Botanists' or other historical work answers to the said initials. Can any reader of The Naturalist kindly give us any information that might lead us to the required identity? —

J. Fraser Robinson,
22 Harley Street, Hull.

The request was in earnest as the specimen of Creeping Lady's-tresses *Goodyera repens* referred to pre-dated the existing records of the plant at its only station in East Yorkshire by almost half a century.

The University of Hull herbarium (HLU) contains only a single sheet that has been attributed to "Dr H. Hewetson", consisting of five flowering spikes of Purple Crocus *Crocus verna* collected in April 1861 "two fields behind Chalk Villa, Beverley", East Yorkshire. The label further identifies the communicator as Dr W. A. Sledge, 25 May 1959, clearly from the material alluded to in Robinson's letter, and demonstrates that some progress had been made in the identification of "H. H." in the previous thirty years. Why these specimens were sent to Hull by Sledge is unclear but the extensive citation of Horrell's herbarium by Rowntree (1954) demonstrates that the collection had received recent close attention.

Kent and Allen (1984) state that plants collected by H. Hewetson were present in the herbarium of Ernest Charles Horrell (1870–1944) which (they say around 1932) was donated to William Arthur Sledge (1904-1991); they present no further biographical information. Sledge (1986), in the first of a series of autobiographical articles in the Bulletin of the YNU, confirms this information, gives the date of the acquisition as 1926, and states that Horrell's interest in flowering plants started when he moved to Scarborough where he *"... amassed a large herbarium in a remarkably short time for he had a wide circle of correspondents from whom he acquired specimens as well as through his own field activities."*. He adds that *"The collection also included many Scottish alpines gathered by Dr. Hewetson who, as a medical student at Edinburgh, had accompanied Professor Balfour on some of his famous botanical excursions in the highlands in early Victorian days."*

In the following issue of the Bulletin Sledge (1987) went further with his identification of "H.H." explaining that it was not until many years later that he identified the collector as Henry Hewetson, who he knew had lived in Leeds in the later part of the 19thcentury, had moved to Scarborough and had known East Riding connections. He also speculated that "H.H." may be in some way connected with Dr Henry Benelack (sic) Hewetson, the four-times president of the Leeds Naturalists' Club, concluding that there may be more information in the archives of the Scarborough Naturalists' Club but it was "not easy to know where next to turn for information".

Fortunately, the last two decades have seen an exponential increase in the amount of biographical information available for online searching. Subscription sites such as the British Newspaper Archive allow key-word searching of millions of newspaper pages and others provide access to vital data, census returns and professional and educational databases. Using these resources it has been possible to confirm that the specimens were indeed collected by Henry Hewetson and also to elucidate exactly who he was and give them a context.

The 1901 census shows that E. C. Horrell was living with his sister in Camberwell, where he is described as a lecturer in botany. In 1904 he married Ada Beatrice Wilson in Chelmsford, Essex, their only child Charles Wilson Horrell being born in Chelmsford the following year. Contemporary newspaper reports show that he left the town in the spring of 1907 after working as a biologist at the Essex County Technical Laboratories. The 1911 census finds him living with his wife, son and a servant in Scarborough, but he is now described as a clothier and outfitter (dealer).

There is only one Henry Hewetson living in the Scarborough area recorded in the 1901 census, a 74 year old gentleman residing on his own means, in some comfort, at 118 Falsgrave Road. Living with him and his wife are a son Alfred (34), a physician and surgeon, and a grandson

Alfred Landman (22) a medical student. The attribution of the title "Dr." to Henry may be due to some confusion in a story which has been orally transmitted over many years. Investigations of the Hewetson family tree demonstrate beyond doubt that the "H. H." of Robinson's 1927 query was Henry Hewetson (1826–1909).

Biography

Henry Hewetson was born in Hull in 1826, the second and younger son of a London-born merchant John Hewetson and his wife Mary née Woodcock. John was a scion of the extensive Hewetson family of Ravenstonedale and became prosperous through his Hull-based shipping interests and inheritance from family members. He was for a long period the occupant of Newland Hall, Hull.

Henry's elder brother Rev John Hewetson (1824–1893) was the incumbent of Measham, Derbyshire for 41 years and raised a large family there. He also had two sisters, Ann Elizabeth and Sarah, both younger, neither of whom married, who lived their entire lives in Hull.

The census for 1841 shows that the brothers John and Henry Hewetson were boarding with Rev. Zachariah Shrapnel Warren, the then headmaster of Beverley Grammar School, in Keldgate, Beverley. The material in the Leeds Herbarium (LDS) (Appendix 1) shows that the eleven earliest specimens, collected in 1840 and 1841, are entirely consistent with this and contain records of plants now lost to the Beverley area.

The presence in LDS of 15 specimens collected in 1847 from Scotland lend some credence to Sledge's (1986) recollection of Horrell's story that Hewetson had been a medical student at Edinburgh. The Edinburgh University archives indeed confirm that Henry Hewetson matriculated in 1846 and 1847 but as a student of the Arts, although he was elected to the Botanical Society of Edinburgh in 1847 and remained a non-resident fellow until at least 1900. There seems to be no record of him completing his degree course and graduating. By very good fortune the association of Henry Hewetson with Prof. John Hutton Balfour (1808–1884) in 1847 can be substantiated.

In 1845 Balfour was appointed King's Botanist at Edinburgh University and it was often his practice during the summer to conduct a field excursion with a group of, mainly medical, students (Balfour, 1902). As a result of a confrontation between his field party and the Earl of Atholl in Glen Tilt on 21 August, the 1847 expedition was particularly well-documented and remembered (Anon., 1847). This encounter, often dubbed "the Battle of Glen Tilt", is generally cited as a turning point in the campaign for public access to the land in Scotland. In a paper printed in the Edinburgh New Philosophical Journal the Professor recounted (Balfour, 1848) *"A party, consisting of Messrs Murchison, Gilby, Ivory, Hewetson, Morse, Douglas, H. Balfour, and myself, met at Aberdeen on the 6th of August 1847, with a view of making an extended botanical trip."*

He then goes on to give a detailed itinerary of the excursion and lists the more significant botanical discoveries. Besides Henry Hewetson it is possible to identify, beyond any doubt, Charles Murchison (1830-1879), Francis Jeffrey Ivory (1831-1896), William Fettes Douglas (1822-1891) and Hugh Melville Balfour (1828-1853); both Murchison and Balfour were medical students. The remaining pair seem likely to be Henry Porson Morse (1825-1874) and,

interestingly, William Gilby (1824-1891) the younger son of Rev. William Robinson Gilby of Beverley. The Herbaria@home project has documented surviving specimens collected by Prof Balfour on this expedition, now in the Perth Museum and Art Gallery (PTH), many of which are fully dated and give an outline of the party's itinerary. Specimens by other members of the group are to be found in other herbaria - Murchison, Woolly Willow *Salix lanata* from Glen Fee and Glen Callater (**E**); Sheathed Sedge *Carex vaginata* from Glen Callater and Woolly Willow from Glen Isla (**E**); H. Balfour, Moss Campion *Silene acaulis* from Ben-na-Muickdhuay, Alpine Forget-me-not *Myosotis alpestris* and Glaucous Meadow-grass *Poa glauca* from Ben Lawers (BIRM), Rock Sedge *Carex rupestris* from Glen Callater (BON). The 1847 Hewetson specimens in LDS documented in Appendix 2 are entirely consistent with the party's route and it is pleasing to note that a specimen of Shady Horsetail *Equisetum pratense* was preserved from Glen Tilt itself.

In 1849 Henry Hewetson married Clementina Juliet Bendelack in Clifton, Bristol; Clementina was born in Paris, a daughter of Angelo Bendelack and Julia Hart Wagg. Angelo died when Clementina was about four years old and Julia, and a substantial family of mainly continental-born children with British nationality, returned to England. Clementina, her mother and four of her siblings were baptised in Hull in 1834 and in 1841 the family were living in Beverley, Yorkshire.

Henry and Clementina's first son, Henry Bendelack Hewetson was born on 3 April 1850. In 1851 Henry was a landed proprietor living in Beverley and his daughter Mary Rosalie was baptised in the town in January of 1852 but his LDS specimens hint at a period spent in Edinburgh during this year. By 1853 he was a gentleman farmer at Barton Hill, where he became an active member of the Barton-upon-Humber and Lincolnshire Horticultural Society. He returned briefly to Beverley around 1860 but In 1863 the family, now comprising eight children, moved to Leeds to "enjoy the greater educational privileges of the town ..." (Hewetson, 1881). The LDS material holds around 30 specimens covering the period 1861-1864 and, in view of Henry's own precocious collecting and evidence of his son Henry Bendelack Hewetson's early interests in natural history, it would be unsafe to assign this body of material to one or the other. Although Bendelack's interests were later focused more on ornithology it is not unreasonable to believe that his father may have preserved later discarded herbarium material.

Henry became a member of the Leeds Naturalists' Club and Scientific Society in December 1871 and is listed as a member as late as 1878. The family resided in Leeds until 1876 when Henry and Clementina, accompanied by the younger members of their family, removed to West Park House, Falsgrave, Scarborough, where Henry was to reside for the rest of his life. Little is known of his activities in Scarborough but he joined the Scarborough Philosophical Society in 1878, served on its council 1882–1884 but had left it by 1885. He was elected a member of the British Astronomical Association in May 1892.

In 1899 the family were hit by the early death of Dr Henry Bendelack Hewetson. By this time Bendelack was well-known to Yorkshire naturalists as an ornithologist and antiquarian, his residence and private museum at "Mount Pleasant" at Easington, near Spurn, regularly featuring in the itinerary of both Leeds and Hull-based societies. His obituary for *The Naturalist* was written by John Cordeaux (1899), who himself died less than three months later. Despite having residences in Leeds and Easington, his funeral was from his parent's house in Scarborough

although, surprisingly, the occasion was not attended by his father.

Henry Hewetson would certainly have been an old man when Charles Horrell arrived in Scarborough and it is possible that Henry's herbarium passed to Charles on or after his death on 2 January 1909, perhaps through the agency of his youngest son Dr Alfred Hewetson (1867–1937).

Postscript

The interest in "H. H." was prompted by his reputed discovery of *Goodyera repens* from Houghton Woods in 1841. Creeping Lady's-tresses as an East Riding plant first came to public record in 1888 when it was discovered by Joseph Jewison Marshall (1859-1934) on the YNU's Market Weighton meeting on 6 August 1888. Provisionally identified as Autumn Lady's-tresses *Spiranthes spiralis* its true identity was only later established (West and Slater, 1888). By 1892 the colony had been collected to extinction and many of the victims are to be found in the herbarium of W W Reeves at Scarborough (SCAR) and other institutions. This earlier record, which would demonstrate the persistence of the taxon in the vice county for over half a century, has been perpetuated since Robinson's request for information in 1927 (Crackles 1990).

Material known to have passed to Leeds Museum from Henry Hewetson, via Horrell and Sledge (Dennett, 2000), does indeed include a specimen of *Goodyera repens*. Unfortunately, this specimen bears the date 1847 and the locality Denmore Woods, Aberdeen, which places it firmly amid the group collected by Hewetson on his Highland excursion with Professor Balfour. " .. Some of the party had been attending the Highland Society's Agricultural Show at Aberdeen, and had made an excursion with Dr Dickie to Denmore, in the course of which they gathered *Diphyscium foliosum*, *Goodyera repens*, *Utricularia minor* in flower, and large specimens of *Drosera anglica*" (Balfour, 1848).

The veracity of the statement is further strengthened by the presence in PTH of a specimen of Long-leaved Sundew *Drosera longifolia* collected by J.H. Balfour in Denmore on 6 August 1847. The existence among Hewetson's material of specimens of Greater Butterfly-orchid from the similarly named East Yorkshire site, Howsham Woods, collected in 1848 and 1861, does now raise the possibility that some confusion may have arisen over the interpretation of poorly-labelled specimens.

Acknowledgements

Particular thanks are due to Clare Brown of Leeds Museums and Galleries for providing information concerning the herbarium sheets attributed to Hewetson. Thanks also to the Centre for Research Collections team at Edinburgh University for providing information about Henry Hewetson's university career. The information concerning Henry's involvement with the Scarborough Philosophical Society was kindly provided by James Middleton, Scarborough Museums & Galleries.

Biographical information has been augmented with data from a range of on-line data sources.

References

Anon. (1847) The Glentilt Obstruction. *The Dundee Courier* 22 September 1847.

Balfour, J.H. (1848) Notes of a botanical excursion, with pupils, to the mountains of Braemar,

Glenisla, and Clova, and to Benlawers, in August 1847. *Edinburgh New Philosophical Journal*, 45 April - October 1848: 122-128.
Balfour, I.B. (1902) History of the Royal Botanic Garden, Edinburgh. Botanical excursions made by John Hutton Balfour in the years from 1846 to 1878 inclusively. *Notes from the Royal Botanic Garden, Edinburgh. July 1902*.
Cordeaux, J. (1899) In Memoriam: H Bendelack Hewetson. *The Naturalist* 511: 237-240
Crackles, F.E. (1990) *Flora of the East Riding of Yorkshire*. Hull.
Dennett, K. (2000) Henry Bendelack Hewetson: 1850 – 1899. A Renaissance man of the Victorian era. *Leeds Museums and Galleries Review*.
Hewetson, H. B. 1881. *The life and works of Robert Hewetson, boy painter and poet*. [privately printed]
Kent, D.H. & Allen, D.E. (1984) *British and Irish herbaria.* London.
Robinson, J.F. (1902) *The flora of the East Riding of Yorkshire*, London.
Robinson, J.F. (1927) Correspondence - Name of East Yorkshire botanist. *The Naturalist* 841: 61.
Rowntree, H. (1954) Vascular plants *in* (Walsh, G.B. & Rimington, M.P.S. eds.) *The natural history of the Scarborough district. Volume 1 geology and botany*. Scarborough Field Naturalists' Society.
Sledge, W.A. (1986) A personal Odyssey-1. Early days. *Bulletin of the Yorkshire Naturalists' Union* 6: 1–4.
Sledge, W.A. (1987) A personal Odyssey-2. Getting launched. *Bulletin of the Yorkshire Naturalists' Union* 7: 1–3.
West, W. & Slater, M.B. (1888) Notes - Botany. *The Naturalist* 159: 312

Appendix 1. List of Herbaria mentioned in the text:
Leeds Herbarium (LDS)
Hull University Herbarium (HLU)
Royal Botanic Garden Herbarium, University of Edinburgh (E)
University if Birmingham Herbarium (BIRM)
Bolton Museum and Art Gallery (BON)
Perth Herbarium (PTH)
Scarborough Herbarium (SCAR)

Appendix 2. Chronologically arranged list of herbarium specimens attributed to Henry Hewetson.

All IDs refer to catalogued specimens in the Leeds Herbarium (LDS) except that marked * which is from the Hull University Herbarium (HLU).

Part A: Attribution certain

ID	Taxon	Date	Locality	Inferred VC
12801	*Anacamptis pyramidalis*	1840	Near Beverley	61
12728	*Anacamptis morio*	1840/05	Beverley	61
17725	*Viola riviniana*	1840/05	Beverley	61
12770	*Dactylorhiza incarnata*	1840/06	Driffield	61
12573	*Epipactis helleborine*	1840/07	Nr Beverley	61
12762	*Dactylorhiza maculata*	1840/07	Beverley	61

12782	*Dactylorhiza praetermissa*	1840/07	Beverley	61
12558	*Epipactis palustris*	1840/08	Near Beverley	61
12571	*Epipactis helleborine*	1840/08	Near Beverley	61
17873	*Viola canina*	1841/05	Beverley	61
12783	*Dactylorhiza praetermissa*	1841/07	Driffield	61
14464	*Asplenium scolopendrium*	1847	Lee Wood, Clifton	6
19306	*Agrostemma githago*	1847	Near Beverley	6
12737	*Goodyera repens*	1847 [/8/6]	Denmore Woods, Aberdeen	92
14440	*Blechnum spicant*	1847 [/8/9]	Braemar	92
14612	*Cystopteris fragilis*	1847 [/8/9]	Braemar	92
19545	*Cerastium fontanum*	1847 [/8/10]	Glen Ballater ([?Callater]),	92
12641	*Coeloglossum viride*	1847 [/8/11]	Little Craig-en-del	
19224	*Silene acaulis*	1847 [/8/13]	Ben Na Muick, Aberdeenshire	92
19225	*Silene acaulis*	1847 [/8/13]	Ben Na Muick, Aberdeenshire	92
19530	*Cerastium alpinum*	1847 [/8/16]	Loch-Na-Gar, Scotland	92
19531	*Cerastium alpinum*	1847 [/8/16]	Loch-Na-Gar, Scotland	92
14719	*Polystichum lonchitis*	1847 [/8/17]	Glen Isla	90
14764	*Gymnocarpium dryopteris*	1847 [/8/17]	Glen Isla	90
14311	*Equisetum pratense*	1847 [/8/21]	Glen Tilt	89
14614	*Woodsia alpina*	1847 *[/8/25]*	*[Ben Lawers]*	*[88]*
18547	*Hypericum humifusum*	1847 [/8/26]	Killin, Perthshire	88
12560	*Epipactis palustris*	1847	Norman Camp near Dalkeith, Edinburgh	83
14489	*Asplenium marinum*	1847		
14781	*Polypodium vulgare*	1847		
14818	*Botrychium lunaria*	1847		
16564	*Lepidium latifolium*	1847	Scotland	
12676	*Platanthera chlorantha*	1848	Howsham Woods	61
18520	*Hypericum perforatum*	1848	Boynton Woods	61
19513	*Cerastium cerastoides*	1848	Loch-Na-Gar, Scotland	92
14414	*Cryptogramma crispa*	1849		
14530	*Asplenium ruta-muraria*	1849	Glen Isla	90
19307	*Agrostemma githago*	1849	Burlington Quay	61
12686	*Platanthera bifolia*	1850	Between Collinghan (?Coldingham) and Reston	?81
15021	*Consolida ajacis*	1851/07	Bonn on the Rhine, Germany	
17676	*Viola hirta*	1852/04	Gosford Links, Eastlothian	82
12621	*Neottia nidus-avis*	1852/05	Cramond Woods, Edinburgh	83
13373	*Potamogeton polygonifolius*	1852/05	Ravelrig	83
14817	*Botrychium lunaria*	1852/05	Island (?Cramond)	
13381	*Potamogeton coloratus*	1852/06	Guillow (?Gullane) Links	?82
14610	*Cystopteris fragilis*	1852/06	Malham	64
14763	*Gymnocarpium dryopteris*	1852/06	Armestow (?Arniston) Woods	?83

16412	*Brassica nigra*	1852/07	Inch Keith, Edinburgh	85
16555	*Lepidium ruderale*	1852/07	Charlestown, Fife	85
16582	*Lepidium coronopus*	1852/07	North Queensferry, Fife	85
16629	*Thlaspi arvense*	1852/07	North Queensferry, Fife	85
16669	*Teesdalia nudicaulis*	1852/07	Braid Hills, Midlothian	83
12639	*Coeloglossum viride*	1852/07	Pentland Hills	
12657	*Gymnadenia conopsea*	1852/07	Pentland Hills	
12680	*Platanthera chlorantha*	1852/07	Pentland Hills	

Information in [square brackets] is inferred from the published itinerary and plant lists (Balfour, 1848). Round brackets indicate other possible interpretations or clarifications.

Part B: Attribution less certain – may include material of Dr Henry Bendelack Hewetson

*12653	*Crocus vernus*	1861/04	Two fields behind Chalk Villa, Beverley	61
17726	*Viola riviniana*	1861/04	Beverley	61
17863	*Viola reichenbachiana*	1861/04	Beverley	61
12743	*Orchis mascula*	1861/05	Beverley	61
16490	*Raphanus raphanistrum*	1861/05	Beverley	61
16682	*Capsella bursa-pastoris*	1861/05	Beverley	61
17724	*Viola riviniana*	1861/05	Bentley Woods	61
12595	*Neottia ovata*	1861/05	Nunkeeling Wood	61
12601	*Neottia ovata*	1861/06	Boynton Woods	61
12730	*Anacamptis morio*	1861/06	Beverley	61
12731	*Anacamptis morio*	1861/06	Beverley	61
12736	*Neottia ovata*	1861/06	Boynton Woods	61
12764	*Dactylorhiza maculata*	1861/06	Beverley	61
16434	*Sinapis arvensis*	1861/06	Beverley	61
16596	*Lepidium didymum*	1861/06	Beverley	61
19562	*Cerastium glomeratum*	1861/06	Beverley	61
12600	*Neottia ovata*	1861/07	Beverley	61
12674	*Platanthera chlorantha*	1861/07	Howsham Woods	61
12685	*Platanthera bifolia*	1861/07	Skipwith Common	61
16489	*Raphanus raphanistrum*	1861/07	Beverley	61
17631	*Reseda luteola*	1861/07	Beverley	61
18571	*Hypericum hirsutum*	1861/07	Beverley	61
14462	*Phyllitis scolopendrium*	1862/03	Bentley Woods	61
14780	*Polypodium vulgare agg.*	1862/03	Bentley Woods	61
17668	*Viola odorata*	1862/04/15	Beverley	61
17669	*Viola odorata*	1862/04/15	Beverley	61
17670	*Viola odorata*	1862/04/16	Beverley	61
17671	*Viola odorata*	1862/04/16	Beverley	61
12765	*Dactylorhiza maculata*	1862/06	Bridlington	61
14880	*Pinus sylvestris*	1862/06	Beverley	61
12800	*Anacamptis pyramidalis*	1864/07/15	Near Bridlington	61

16524	*Cakile maritima*	1880	Bridlington Quay	61
14730	*Oreopteris limbosperma*	1882/06	Pentland Hills	
16668	*Teesdalia nudicaulis*	1882/07	Braid Hills, Midlothian	83
12687	*Platanthera bifolia*	1882/07/09	Pentland Hills	
14461	*Asplenium scolopendrium*	1900	Nightingale Valley, Clifton	6
12771	*Dactylorhiza incarnata*	undated		
13361	*Potamogeton natans*	undated	Beverley	61

YNU Excursion Reports 2021

Flamborough Head (VC61) 22 May 2021

INTRODUCTION (Africa Gómez)
Attendees: Bill Dolling, Africa Gómez, Helen Kitson, Gabrielle Jarvis, Richard Middleton, Richard Shillaker.

The blustery, cold weather of the day was not ideal to record and enjoy the natural history of Flamborough. This and the long journey resulted in just six members belonging to the Hull Natural History Society and Yorkshire Willdlife Trust attending the excursion. The day started overcast with strong north-westerly winds and stayed quite cold at 8°C although, fortunately, it was dry all day. Given the weather conditions, we deemed it best to explore the southern side of the headland. Most walked from the lighthouse to South Landing on the clifftop path, and back via Lighthouse Road, though a couple of members were botanising and had a shorter circuit. Some members enjoyed a brief sunny spell at lunchtime on the sheltered beach at South Landing, which encouraged some insects out. We reconvened at 15:30 by the Lighthouse for an informal outdoor meeting and ice cream.

BOTANY (G. Jarvis)
Our walk encompassed cliff top and grassy slopes, arable field edges and hedgerows, a small wood and two small ponds.

On the cliff top we found a mix of coastal plants such as Thrift *Armeria maritima*, Sea Plantain *Plantago maritima*, Sea Mayweed *Tripleurospermum maritimum* and Alexanders *Smyrnium olusatrum*, and familiar chalk grassland plants such as Salad Burnet *Poterium sanguisorba*, Mouse-ear Hawkweed *Pilosella officinarum*, Common Restharrow *Ononis repens* and patches of rarer, windblown, delicate Field Mouse-ear *Cerastium arvense*. Not far from the lighthouse, where the cliff edge was intact, there was a close-packed carpet of low-growing plants, mainly Buckshorn Plantain *Plantago coronopus* and Thyme-leaved Sandwort *Arenaria serpyllifolia* and, right on the cliff edge, tiny Sea Mouse-ear *Cerastium diffusum* – definitely the star find of the day!

Steep but accessible grassy slopes were bright with Primrose *Primula vulgaris*, Kidney Vetch *Anthyllis vulneraria*, Wallflower *Erysimum cheiri* and an incongruous but well-established flowering clump of Red-hot-poker *Kniphofia uvaria*, but where there was more recent slippage the slopes were colonised by mundane species. It was disappointing to find only one Northern Marsh Orchid *Dactylorhiza purpurella*, which is more common further north, notably at

Runswick Bay, and only one Common Sedge *Carex nigra*. Fumitory *Fumaria officinalis* was an arable weed in a bean field, Black-grass *Alopecurus myosuroides* less welcome in a wheatfield and Crab Apple *Malus sylvestris* grew in the hedge. Grasses were coming into flower but only common species were in evidence.

On a hedge-bank along the road verge was a patch of White Comfrey *Symphytum orientale*, our only pure white-flowering comfrey.

INVERTEBRATES (W.R. Dolling, with contributions from R. Shillaker, H. Kitson and A. Gómez)
It was too cold and windy for any really profitable entomology so I chaperoned the intrepid Gabrielle as she botanized on the clifftop - an interesting experience! Certainly the plants provided the best finds; there were two species of *Cerastium* that I hadn't seen in a long time and the mix of maritime and calcicole species was curious to see.

ARACHNIDA: Galls of mite *Aceria centaureae*, on leaves of Greater Knapweed.

DIPTERA: Lots of St Mark's Fly *Bibio marci* e.g. on Alexanders near the Lighthouse (interesting how they could hang on to vegetation in such windy conditions).

LEPIDOPTERA: A Wall Brown was seen by the path near South Landing while on the South Landing ravine an Orange Tip and a Large White were seen flying and nectaring.

MARINE INVERTEBRATES (A. Gómez)We carried out no surveys but we noted the presence of Piddocks *Pholas dactylus* on chalk boulders on the beach at South Landing.

PLANT GALLS: Bedeguar Galls or Robin's Pincushions. c.7 galls of *Diplolepis rosae* at Hartendale Farm TA22236993. One gall found on Dog Rose was kept overnight 22-23 May and both the gall wasp itself and its ichneumonid parasite *Orthopelma mediator* emerged from the galls.

BIRDS (A. Gómez)
The strong winds allowed us to enjoy the spectacle of the seabird colony, particularly on the north side of the headland. A constant stream of hundreds of auks and squadrons of Gannets moved north around the headland, staying close to the rough waves. As we trained our binoculars on the sea a Great Skua (Bonxie) was seen flying amongst them and then disappeared behind the cliffs under the fog station. Kittiwakes, Razorbills and Guillemots sat on their nests or ledges on cliffs, visible from the coastal path by the lighthouse. Fulmars circled the cliffs. We noted a colony of about 15 Herring Gulls sitting on their nests on the glacial till atop a stack, with Kittiwakes using the ledges on the cliff underneath. Another spectacle was provided by two distant large flocks of Kittiwakes collecting nest material (grass and mud) from fields by the Golf Course. Apparently this behaviour used to be called 'twitching' (thank you to Richard Broughton for this titbit).

We noted evidence of breeding activity in other birds. Singing Yellowhammers, Whitethroats, Skylarks and Reed Buntings were recorded. A Meadow Pipit was carrying a large caterpillar and a Pied Wagtail fighting an earwig on the path. A Rock Pipit at South Landing had some feeding trips back and forth to its nest, looking frantically for food on the cliffside vegetation. On the south side of the headland, both Sand Martins and House Martins were foraging around the clifftops and fields, presumably near their nests. Sand Martins excavate their nests on the glacial till layer at the top of the cliffs, especially in areas where there have been recent falls,

exposing the sandy lenses in the till. The House Martin colony at Flamborough is of interest as one of the few populations that builds their nests under ledges in natural cliffs in the county, which is likely to be the ancestral nesting habitat for the species (Clark & McNeil, 2008). Their nests are visible at North Landing and Sewerby area from the beach. Tree Sparrows were noted by Highcliffe Manor and a Kestrel hovering close over the clifftop edges at Selwicks Bay was watched by all. Overall, a total of 45 bird species were recorded from about 7 km^2.

Left: One of the coves around Flamborough Head.
Photo: Helen KItson

Below left: Three-cornered Garlic *Allium triquetrum.*
Photo: Helen Kitson

Below right: Nesting Kittiwakes.
Photo: Africa Gomez

MAMMALS (A. Gómez)

Several Grey Seals *Halichoerus grypus* bobbed in the sea scattered around the headland. The existence of a healthy European Mole population *Talpa europaea* was evidenced by the plentiful molehills on the sides of paths. A Weasel *Mustela nivalis* was also seen crossing the Lighthouse Road.

References

Clark, F. & McNeil, D.A.C. (2008) Cliff-nesting colonies of house martins *Delichon urbica* in Great Britain. *Ibis* 122: 27–42.

Duncombe Park (VC62) 13 June 2021

INTRODUCTION (Sarah White)
We were lucky enough to have a glorious sunny and warm day and 18 people attended the meeting. It was good to see particularly strong representation from our affiliated society the Darlington and Teesdale Naturalists' Field Club as well as three new YNU members attending their first excursion.

The site is extensive and offers a range of habitats, not all of which could be explored in the time available. We were extremely grateful to James Hare and the Duncombe Park Estate and to Craig Ralston of Natural England for permission to hold our meeting.

The tea and meeting was held at The Feathers in Helmsley, at a table outside in order to abide by the current Covid regulations. The President, Judith Allinson, chaired the meeting attended by 11 of the group representing 7 affiliated societies.

FLOWERING PLANTS (Elizabeth Elliott and Sarah White)
A walk was taken by the botany group along the bank of the River Rye between the lower car park (SE613838) and the weir by the former mill (SE607830), with over 80 species recorded. The first part of the walk was through woodland and then the riverbank is lined with trees, with heavily grazed semi-improved pasture beyond. Trees included Pedunculate Oak *Quercus robur*, Field Maple *Acer campestre*, Ash *Fraxinus excelsior,* Horse Chestnut *Aesculus hippocastanum* and Guelder-Rose *Viburnum opulus*. The Ash was suffering worryingly severe symptoms of Ash Dieback in places.

Where the riverside is fenced from grazing stock, a richer mix of plants has developed. Those recorded here included Sweet Cicely *Myrrhis odorata*, Wood Stitchwort *Stellaria nemorum*, Crosswort *Cruciata laevipes*, Lady Fern *Athyrium felix-femina*, Bluebell *Hyacinthoides non-scripta*, Primrose *Primula vulgaris*, Pignut *Conopodium majus*, Bugle *Ajuga reptans* and Cuckoo Flower *Cardamine pratensis*.

Beyond the meadows there is a steep bank of ancient woodland, part of which was also explored. Notable plants here included Hard Shield-fern *Polystichum aculeatum*, Yellow Pimpernel *Lysimachia nemorum*, Wood Melick *Melica uniflora*, Three-nerved Sandwort *Moehringia trinerva*, Hart's-tongue Fern *Asplenium scolopendrium*, Giant Bellflower *Campanula latifolia*, Hairy St John's-wort *Hypericum hirsutum*, Redcurrant *Ribes rubrum* and Great Woodrush *Luzula sylvatica*. Bulbous Buttercup *Ranunculus bulbosus* was flowering along the edge of the Parkland.

Beyond the cattle grid, through the big iron gates, the grass had been left uncut and un-grazed among the parkland trees, providing a different and attractive habitat. The bank beside the drive was calcareous with a lot of Downy Oat-grass *Avenula pubescens* and Quaking Grass *Briza media*. The nearby wall to the temple provided a shaded habitat with Brittle Bladder fern *Cystopteris fragilis*, Giant Fescue *Schedonorus giganteus*, Remote Sedge *Carex remota* and Wall Lettuce *Mycelis muralis*.

Behind the Hall another area of grassland was managed as a meadow and it had a rich flowery sward in which Common Knapweed *Centurea nigra* was abundant. Not yet in flower, it would soon provide a rich nectar source. Other plants here included Salad Burnet *Poterium*

sanguisorba, Bird's-foot Trefoil *Lotus corniculatus*, Cowslip *Primula veris*, Quaking grass, Glaucous Sedge *Carex flacca*, Pignut *Conopodium majus*, Lady's Bedstraw *Galium verum* and Germander Speedwell *Veronica chamaedrys*.

MYCOLOGY (Jill Cunningham)

Over 30 fungal species were found in only a relatively small area of the grounds. It was still early and too dry for most of the larger fungi but chunky Dryad's Saddles *Polyporus squamosus* (see front cover) and clumps of Glistening Inkcaps *Coprinellus micaceus* were erupting from dead wood and the old remains of Chicken of the Woods *Laetiporus sulphureus* and Shaggy Bracket *Inonotus hispidus* were a hint of what was to come. Many of those found are micro-fungi such as the rusts which are mainly host-specific and flourishing on plant leaves; the orange circles of tiny aecial cups of *Puccinia sessilis* on Lords-and-Ladies *Arum maculatum* and the dark purple smut of *Microbotryum lychnidis-dioicae* smothering the anthers of Red Campion *Silene dioica*. Enlarged, distorted 'Pocket Plum' fruit, infected by *Taphrina padi*, were seen on a Bird Cherry *Prunus padus* between the main house and Birds of Prey Centre. Many Taphrinas and rusts are also classed as gall causers as they cause abnormal plant/cellular growth.

PLANT GALLS (Tom Higginbottom)

It was a delight to explore the beautiful parkland of Duncombe Park while being supported by Jill Cunningham. Few galls were found on the splendid ancient oaks but on younger trees Oak Apple galls caused by *Biorhiza pallida* and Curved-leaf Gall caused by *Andricus curvator* were identified. Old galls on oak buds were still visible; Marble Gall *A. kollari* and Cola-nut Gall *A. lignicolus*. On leaves were colonies of the raised pimples formed by the psyllid *Trioza remota*. The leaflets of Ash trees were host to distinctive midge galls, *Dasineura fraxini* which swells the central vein and the less common *D. acrophila* which folds the leaflet into a pod shape. The leaf rolls formed by the psyllid *Psyllopsis fraxini* agg. was common. Lime trees were host to a variety of galls. The mite gall *Eriophyes leiosoma* forming the erineum on the underside of the leaves was common, although we did not discover the common *E. tiliae*. There were also midge galls: *Contarinia tiliarum* forming rounded swellings on leaf petioles, *Didymomia tiliacea* creating swellings on the upper side of the leaves and *Dasineura thomasiana* twisting and distorting young terminal leaves. Beech was host to mite galls: *Aceria stenaspis* rolling the edge of the leaf and the erineum on the underside formed by *A. nervesequa*. The midge *Iteomyia capreae* was common on sallow leaves while on the underside of some leaves were the distinctive, often hairy, spherical galls formed by sawfly *Eupontania pedunculi*. Yellow bulges on Aspen leaves indicated the mite gall *Phyllocoptes populi.* While walking by the River Rye the mite galls *Acalitus brevitarsus* and *Eriophyes laevis* were seen on Alder leaves. The hairy pouches caused by the midge *Jaapiella veronicae* were found on a colony of Germander Speedwell. The tips of Broad Buckler-Fern had been rolled upwards by the midge *Chirosia betuleti.* Leaves thickened and distorted on Greater Stitchwort were galled by the aphid *Brachycolus stellariae*. A number of fungi galls were identified: the orange aecia on Dog's Mercury *Melampsora populnea*, on sallow *M. caprearum*, on Meadowsweet *Triphragmium ulmariae* and on Common Nettle *Puccinia urticata.* The leaf surface of Creeping Thistle was host to the fungal galler *P. punctiformis*. White translucent mounds on veins of Ground-elder showed they were galled by the fungus *Protomyces macrosporus*. Orange aecia of a *Phragmidium* were seen distorting a rose twig. On Bramble leaves, purple spots on the upper surface indicated the fungal gall *P. violaceum* while small conspicuous warts were caused by *Kuehneola uredinis.* Jill Cunningham spotted the adult fly *Tephritis bardanae*, which attacks the florets and immature achenes of Lesser Burdock *Arctium minus* forming galls. Another insect sighting was *Urophora stylata,* which attacks the receptacle and achenes of Spear Thistle *Cirsium vulgare*, forming hard, woody galls.

CONCHOLOGY (Jill Cunningham)
The following species were recorded: *Arianta arbustorum, Cepaea hortensis, Monacha cantiana, Succinea putris* and *Trochulus striolatus.*

LEPIDOPTERA (Terry Whitaker)
Eight species of butterflies were recorded: Large White, Small White, Green-veined white, Orange Tip, Brimstone (male), Peacock, Small Tortoiseshell and Speckled Wood. None of these were abundant, possibly due to a lack of nectar plants.

A number of casual moth records included Green Carpet *Colostygia pectinataria*, Silver-ground Carpet *Xanthoroe montanata*, Nettle-tap *Anthophila fabriciana* (abundant over nettle beds towards evening), *Crambus lathoniellus*, *Chrysoteuchia culmell*a, Timothy Tortrix *Aphelia paleana* (7 in long vegetation on the riverbank) and Bird-cherry Ermine *Yponomeuta evonymella*.

COLEOPTERA (Bob Marsh)
On a day of fine weather several coleopterists attended the meeting at this prime Yorkshire site, renowned for its invertebrate, and particularly its coleopteran, fauna. Members visited areas to pursue their own interests. Sam Newton worked the area around the Birds of Prey Centre and noted the rare oedemerids *Ischnomera sanguinicollis* (hitherto with only five Yorkshire records), and the very local *Oedemera virescens,* restricted to the Helmsley area in Yorkshire; the cerambycid *Anaglyptus mysticus*, was also recorded, apparently for the first time in Duncombe Park. Andy Millard recorded the occurrence of the rare cerambicid *Anoplodera sexguttata* which is restricted to the Helmsley and Gundale/Pickering areas, with only eight county records (see photo p221), and the Cardinal Beetle *Pyrochroa coccinea*. Although outside the SSSI but still within the Park, the Mill Bridge/River Rye area was visited by Bob Marsh who recorded the scarce longhorn *Alosterna tabacicolor* in old oak logs, and the oedemerid *Ischnomera cinerascens* beaten from the flowers of old hawthorn. This latter species constitutes only the second county record and was first encountered at the same locality in 1993. The banks of the River Rye here yielded a specimen of the staphylinid *Philonthus rubripennis*, a specialist of shingle bars in fast-flowing streams and only known in Yorkshire from Fountains Abbey and Helmsley. The total Coleoptera species count for the day was a rather disappointing fifty-five.

HYMENOPTERA - ACULEATA (Andy Millard)
Most species recorded are relatively common in England and Wales, although some are nearing the northern edge of their ranges. Species not recorded by Archer (1993, 2008) are indicated by *.

Most time was spent in the eastern grassland area between the river and wooded escarpment, from near the estate entrance in Helmsley to the Mill Bridge. Bee numbers were small with a few individuals of the common bumblebees, and a colony of the Ashy Mining Bee *Andrena cineraria* near the weir. Andy Grayson recorded the mining bees *A. helvola* and *A. haemorrhoa*, together with *Lasioglossum punctatissimum** and *Hylaeus communis*. The blood bee, *Sphecodes ephippius**, a kleptoparasite of several mining bee species from the genera *Halictus*, *Lasioglossum* and *Andrena* was also recorded.

Dead lying timber at sporadic intervals around the area was more productive, providing nesting habitat for a number of solitary wasps as well as hunting habitat for colonies of the ant *Myrmica rubra**. The wasps included crabronids *Mimumesa dahlbomi*, *Ectemnius continuus** and *Crossocerus cetratus*. Andy Grayson also recorded the Chrysid *Pseudomalus auratus*, social

wasp *Dolichovespula saxonica**, the crabronids *Nysson spinosus** and *Crossocerus walkeri* and the vespid *Symmorphus gracilis*. *C. walkeri* has previously been recorded at Duncombe by Archer (1993) and has a wide geographical distribution but records are very sparse and it is now categorised as Nationally Scarce. The metallic blue/green chrysid wasp *Trichrysis cyanea*, a kleptoparasite, primarily of the wasp genus *Tripoxylon,* was recorded from a log near the river. Finally, two spider hunting wasps (Pompilidae) were recorded, a male *Dipogon subintermedius* and, more dramatically, a female *Anoplius nigerrimus** emerging from a crack in dead timber carrying its prey, a mature female wolf spider *Trochosa terricola* (identified by Geoff Oxford).

References

Archer, M. (1993). The aculeate wasps and bees (Hymenoptera: Aculeata) of Duncombe Park in Watsonian Yorkshire. *The Naturalist* 118 (No. 1005): 37-44.

Archer, M. (2008). Revisiting the solitary wasps and bees (Hymenoptera: Aculeata) of Burton Leonard lime quarries and Duncombe Park in Watsonian Yorkshire. *The Naturalist* 133 (No. 1064): 21-27.

Top: Green Drake Mayfly *Ephemera danica. Photo: Terry Whitaker*
Lower left: The picture-winged fly *Tephritis bardanae* forms galls on Lesser Burdock *Arctium minus* (see p219). *Photo T. Higginbottom.*
Lower right: The rare *Anoplodera sexguttata (female)* (see p220). *Photo: Andy Millard*

HYMENOPTERA - SYMPHYTA (Ian Andrews)
I got down onto the river edge in a couple of spots below Terrace Bank Woods; otherwise, I mainly worked the steep Terrace Bank Wood itself. We were a couple of weeks late for peak sawfly-season which, combined with a lack of herb-rich grassland and the fact that most tree foliage was fully out, meant few sawflies were flying. However, *Tomostethus nigritus,* a scarcely recorded species in Yorkshire whose larvae feed on Ash, was the second record for VC62, with the previous one 49 years ago. Other sawflies recorded were: *Athalia cordata f, Dolerus fumosus f, Nesoselandria morio f, Tenthredo livida mf, Tenthredo mesomela mf, Tenthredo notha f.*

DIPTERA and other orders (Andrew Grayson)
The Diptera results from the meeting were not overly spectacular but included a number of flies that are seldom found or little-recorded in Yorkshire. These included the large and colourful crane-fly *Ctenophora pectinicornis*, found in Terrace Bank Wood by Ian Andrews and already known from Duncombe Park due to Peter Skidmore's earlier studies. Ian worked the steep Terrace Bank Wood plus the edge of the River Rye below. His list included the following nationally Local flies: *Cylindrotoma distinctissima*, *Rhagio notatus*, *Hilara obscura*, *Tetanura pallidiventris* (also found previously by Peter Skidmore) and *Suillia affinis*; plus the regionally Local *Seioptera vibrans* and *Minettia longipennis*.

The writer worked the following four areas of Duncombe Park: woodland margins near the Tank Wash (centrum SE612883342; old woodland on a slope near the Parkland Centre (centrum SE60448327); Park Hill Wood (centrum SE60198247); and a section of the River Rye near Mill Bridge that included a shingle island (centrum SE60468328). The resultant list included a number of nationally or regionally Local flies, including: *Phaonia serva* from Park Hill Wood; *Portevinia maculata* and *Scathophaga inquinata* from the shingle area; *Chrysops caecutiens*, *Criorhina berberina* and *Fannia lustrator* from the old woodland area, and *Hydrophoria ruralis* from the Tank Wash area. The latter is widespread in Yorkshire but not known from many sites. Its discovery at Duncombe Park is only the second VC62 record, the first being from further up the valley at Ashberry Pasture in 1980 by Peter Skidmore.

Jill Cunningham's work during the Duncombe Park meeting produced an addition to the VC62 Diptera list, viz. *Pegomyia laticornis*, whose blotch leaf-mines she found in burdock in woodland at SE609832. This is only the second Yorkshire record for this Nationally Scarce fly, the first being from Stainton Low Wood in VC65 by Peter Chandler in 1981. Jill also recorded the blotch leaf-mine of the nationally Local *Pegomyia solennis* in Broad-leaved Dock *Rumex obtusifolius* in the Tank Wash area at SE612834.

BIRDS (Sarah and Ken White)
A total of 34 species were recorded during the visit. Notable records included a Dipper on the river and a Red Kite perched in a riverside tree. There was breeding evidence for Grey Wagtail (pair alarming on riverside gravel), Marsh Tit (alarm calls heard in two parts of the woodland), Blue Tit (nesting in riverside nestbox), Treecreeper (family group), Long-tailed Tits (family group), Pied Wagtail (juvenile on lawn by the Hall), House Martins (nesting on the Hall), Goldfinch (family group). Disappointingly, there were no sightings of Pied Flycatcher, Spotted Flycatcher or Lesser-spotted Woodpecker, despite very suitable feeding habitat. We thought it possible that the removal of Ivy from trees has restricted possible nesting sites.

SUGGESTIONS FOR CONSERVATION AND MANAGEMENT
There was disappointment that the riverside grassland was so hard-grazed and species-poor. In contrast, the fenced-off strip of grassland beside the river was full of flowering plants, micro-fungi and invertebrates, and it was suggested that there would be considerable wildlife benefit if the fence could be moved back into the pasture by 10 feet or so to increase this valuable habitat.

The stumps and fallen trunks left in the meadows provide a good habitat for fungi although areas of un-grazed herbage around them could increase the diversity. Woodlands are at their best for fungi in autumn and there seems to be a good mix of mature and young trees. Continuing to allow fallen wood to remain and rot on the ground will encourage invertebrates and fungal growth. Areas of ungrazed vegetation around them adds to their value.

Members commented favourably on the un-grazed area of long grass amongst trees inside the iron gates and the herb-rich 'meadow' area behind the hall.

It was recommended that Ivy should not be cut from the trees unless individual specimen trees were at risk of being brought down. Ivy is a vital source of food for invertebrates, as well as being important for nesting and roosting birds. The installation of nest boxes for Pied Flycatchers might encourage this species.

The provision of a wetland area or pool would increase diversity – perhaps dig some scrapes along the riverside?

Dearne Valley, Barnsley (VC63) 3 July 2021

INTRODUCTION (Joyce Simmons)
The light drizzle which greeted the 20 members and friends in the car park by the River Dearne was not initially too discouraging. Members had travelled widely from within the county, so the disappointing weather was particularly unwelcome. The suggested route for the day was decided with help from Peter and Annefie Roberts of Barnsley Naturalists' Society, and seemed a very promising prospect for invertebrates in particular. However, the weather gods were against us and the chosen route beside the river was made narrow by heavy, wet vegetation which fell over the path. Heavier rain did not help but 15 hardy souls struggled on. Particular praise goes to Jill Lucas and Don Grant, our most elderly participants, who valiantly survived the whole day. Luckily, a dry spot for lunch was found under a disused railway viaduct. The afternoon was much kinder: the rain stopped, the paths became broader and drier, the vegetation proved more interesting and invertebrates became much more visible. Back at the car park the rain began again. It was decided not to hold a reporting meeting since the whole group had stayed together and had seen the interesting finds. However, it was agreed by all that despite the adverse weather everybody had enjoyed the day.

My thanks to everyone who attended, and particularly to Peter and Annefie for all their help with the organisation.

BOTANY (Kay McDowell)
We met in the car park next to Monk Bretton Priory for a look round the new Dearne Valley Wetlands SSSI then set off along the footpath passing some attractive planted Silver Maple

Acer saccharinum. We also looked at the verge containing some native plants including Turnip *Brassica rapa* ssp. *rapa*. Needing more of a challenge, we examined Smooth Brome *Bromus racemosus* and then compared it to some Soft Brome *Bromus hordeaceus* which we were told could be hairy or not hairy, a puzzle we mulled over until luckily we came across swathes of Hoary Cress *Lepidium draba*. Partially sheltered under an old railway bridge we came across another species from the *Brassicaceae* family, Field Pennycress *Thlaspi arvense*.

Walking along the footpath with the River Dearne on our right hand side and reed swamp on our left, we decided to explore a narrow path down to the river. Louise got her fishing rod/grapnel out to fish out some pondweed. After examining it, she decided it was Fennel Pondweed *Stuckenia pectinata* with its two tubes clearly visible with a hand lens, which is a diagnostic feature.

Then it started to drizzle, then it rained heavily for several minutes as we climbed over a fallen Crack Willow tree *Salix* x *fragilis* across the path. Lunchtime was spent sheltering under a railway arch. Our leader Joyce gave us two options, exploring some adjacent woodland or a nearby meadow. We set off for the meadow, crossing a footbridge over the River Dearne and into a grassland containing a small amount of Mat-grass *Nardus stricta* indicating acid grassland; other acid grassland plants included the yellow flowers of Tormentil *Potentilla erecta*, the small white flowers of Heath Bedstraw *Galium saxatile* and Heath Wood-rush *Luzula multiflora*, noting its tussock-forming habit.

We wandered through some woodland above the acid grassland and on to the Trans Pennine Trail footpath, here we saw Imperforate St John's-wort *Hypericum maculatum ssp. obtusiusculum*, Common Knapweed *Centaurea nigra*, Zigzag Clover *Trifolium medium* and also Many-flowered Rose *Rosa multiflora*. Tufted Vetch *Vicia cracca* was climbing up through some Hazel *Corylus avellana* along the edge of the path and looked really attractive. "Its an edge of woodland plant" John said, "doing exactly what its supposed to do". We walked through a railway cutting with rocky sides and scattered ferns. Then we spotted Bladder Campion *Silene vulgaris*. On the bridge we saw the aromatic Perennial Wormwood *Artemisia absinthium* (see p225).

The sound of the fairground music and screaming meant we were nearing civilisation. We had walked about 3 miles, found 170 species including 6 brambles. The rarest plant was Imperforate St John's-wort. "It was a good list for an area on the edge of houses, roads and old railways" said Don.

PLANT GALLS (Tom Higginbottom)

It is always a delight to explore the Dearne Valley for galls. The Barnsley Naturalist and Scientific Society has made important gall discoveries in recent years. At an early stage of our explorations a Silver Maple *Acer saccharinum* was discovered with leaves covered in the mite pimples of *Vasates quadripedes*. Mite galls were noted on the leaves of lime, the erineum on the underside of the leaf formed by *Eriophyes leiosoma* and the pimples of *E. tiliae*. We had to be careful walking along the steep slope of the Dearne. Mite galls were common on Alder: *Acalitus brevitarsus* erineum on the underside of the leaf, *Aceria nalepai* pimples down the central vein on the upper surface and *E. laevis* pimples spread all over the leaf. Crack Willow was frequently seen but it took careful searching to find the Sawfly Bean-shaped Gall *Pontania proxima*.

Left: Perennial Wormwood *Artemeis absinthinum* growing on an old railway bridge in the Dearne Valley. *Photo: Kay McDowell.*

Right: Last instar of Forest Bug *Pentatoma rufipes. Photo Joyce Simmons.*

On wooded slopes young Sessile Oaks *Quercus petraea* revealed on the underside of their leaves early stages of galls caused by gall wasps, the Silk Button *Neuroterus numismalis* and the Common Spangle *N. quercusbaccarum*. It was exciting to find the uncommon Cherry Gall *Cynips quercusfolii* in its early stages. Walking back along an old railway line led to the discovery of galls on sallows. The small pimples of the midge *Iteomyia capreae* and the Hairy Sawfly Gall *Eupontania pedunculi*. Bracken *Pteridium aquilinum* was common beside the pathway, on some pinnulets were the little Black-pudding Gall caused by the midge *Dasineura pteridis*. There were also pinnules rolled downwards formed by the leaf-miner *Chirosia grossicauda*. Irregular thickened pouches were discovered on the Stinging Nettle *Urtica dioica* formed by the midge *D. urticae*. Galls on Ash *Fraxinus exelsior* were common, *D. fraxini* swelling the central vein and the psyllid *Psyllopsis fraxini* agg. rolling the edge of the leaf.

INSECTS (Paul Simmons and Catherine Artindale)

The wet conditions were not conducive to a productive day for insects in general. Only 4 butterflies – Ringlet, Speckled Wood, Meadow Brown and Small White were seen. Despite the cloud, Azure Damselfly *Coenagrion puella*, Blue-tailed Damselfly *Ischnura elegans* and Banded Demoiselle *Calopteryx virgo* were found beside the river.

Other insects included: scorpionfly *Panorpa communis,* Forest Bug *Pentatoma rufipes* (above) and Parent Bug *Elasmucha grisea,* micromoth *Eucosma cana* and the black-and-yellow longhorn beetle *Rutpela maculata.*

BIRDS (Paul Simmons)

The weather, combined with the end of the breeding season, meant that rather few birds were found by group members. Heron, Reed Bunting, Black-headed Gull and Kingfisher reflected the considerable area of wet ground and ponds on the north of the site, as well as the River Dearne itself. Chiffchaff, Whitethroat, Blackcap and Bullfinch were present in the hedges and scrub, and the woodland area supported the expected species, including Buzzard and Great-spotted Woodpecker. A Skylark managed a song-flight in the drier afternoon.

Askham Bog (VC64) 17 July 2021

INTRODUCTION (Ken White)
This meeting was held at the special request of Professor Alastair Fitter who has been continuously involved in the study and conservation of Askham Bog for nearly 50 years. The recent more intensive management regime of clearance, grazing and higher water levels over the last 10 years has resulted in a mosaic of mature carr woodland interspersed with significant areas of thriving fen plant communities, pools and wet ditches. Recent moth trapping effort has increased the species list by 60% from 267 to 424 and Alastair asked the YNU to investigate other taxa that are clearly under-recorded. The site had been under threat from a recent development proposal for 500 new homes, which thankfully was refused, but Alastair was keen to boost the baseline data to support further such campaigns to protect this site.

The excursion was originally planned for July 2020 but had to be postponed until 2021 due to the travel restrictions imposed by the Covid19 pandemic. We were fortunate to have glorious weather for the excursion and it was very pleasing to welcome 36 members, with 11 members representing 9 of the affiliated societies at the tea and meeting in the afternoon at the nearby Pike Hills Golf Club.

The YNU's involvement with the site started with an excursion in 1879, followed by further visits in 1900, 1921 and 1963. Surprisingly therefore, for a site of this quality, this was the first excursion for some 58 years, although there have been sectional meetings and Individual YNU members have visited independently and contributed to the recording effort in the meantime.

On the 1897 visit, Askham Bog was described as a "swampy thicket". A total of 179 vascular plants were recorded, and particular note was made of the occurrence of Fibrous Tussock-sedge *Carex appropinquata* (then known as *C.paradoxa),* then, as now, found in only 3 of the 112 UK counties. Amongst other plants included in the report were Royal *Osmunda regalis* and Marsh Ferns *Thelypteryx palustris*, with the added comment that members were specially requested not to take any specimens from the site. The report of this first excursion also recognised the importance of the peat bog being permeated by base-rich groundwater which had led to fen-rich plant communities; significantly, the YNU excursion in July 1963 noted that the reserve appeared to be drying out and this was of great concern to the botanists in particular.

"What a wonderful and amazing place Askham Bog is" remarked one visitor to me while I checked members in and out of the YNU register at the reserve gate. She went on to say that "it was my saving grace during the Covid19 lockdown, more than ever before". A brief and polite exchange between passing strangers, and yet how succinctly the importance of Askham Bog was summarised in just a couple of sentences. This green and peaceful oasis is set in a sea of intensive agriculture, growing towns, fast busy roads, and the latest modern-day pressures.

GEOLOGY / GEOMORPHOLOGY (Ken White)
Triassic sandstones & mudstones, and Lower Jurassic mudstones underlie the extensive glacial drift of the area. The retreating Pleistocene icesheets left a complex mixture of sands, gravels and clays that were spread, deposited and shaped into terminal moraines, running broadly east to west, the southernmost one at Askham forming both a formidable barrier to the drainage of water and a convenient route for the A64 trunk road. Impeded drainage formed a glacial lake, with subsequent peat formation and ground water rising from alkaline sediments below combining to form a rich fen community. Where vegetation grew above the influence of

ground water, conditions became acidic and growth of *Sphagnum* bog communities resulted in a raised bog. Medieval peat-cutting removed the dome and allowed base-rich ground waters to encourage the return of a fen community. Seral succession to woodland occurred, although management by grazing, tree and tall fen cutting, and maintenance of high water levels has resulted in a mosaic of fen, woodland and meadow habitats affected by ground water percolation and precipitation.

BRYOPHYTES (Tom Blockeel)

It was not possible to examine all parts of the Reserve thoroughly, and bryophyte recording was mostly concentrated in Far Wood and Near Wood. The open area of moist heath in Far Wood was the richest area for *Sphagnum*, and four species were recorded: *S. palustre*, *S. squarrosum*, *S. fimbriatum* and *S. fallax*. Also present in good quantity in this area were *Aulacomnium palustre* and *Polytrichum commune*. *Calliergon cordifolium* was found in some of the wet areas nearby, though rather sparsely. The wet Alder woodland on the south side of Near Wood had much *Chiloscyphus pallescens* growing on wet soil among tree roots.

Small amounts of *Sphagnum palustre* and *S. squarrosum* were also located in Middle Wood, and a few patches of *S. palustre* were present in Far Wood, mostly in the form with reflexed leaves mimicking *S. squarrosum*. The patches in Far Wood grew in an area of *Molinia* tussocks in open woodland. Acid humus in this area provided a habitat for several other bryophytes, including *Calypogeia fissa*, *Lepidozia reptans*, *Aulacomnium androgynum*, *Campylopus flexuosus*, *Tetraphis pellucida*, and three species of *Plagiothecium*, *P. curvifolium*, *P. denticulatum* and *P. undulatum*, the latter being primarily a moss of the uplands which is scarce in lowland regions. A little *Eurhynchium striatum* was found among the *Molinia* but rather surprisingly not elsewhere in the woodland. A large patch of the distinctive but common woodland moss *Thuidium tamariscinum* was also found in Far Wood.

Perhaps the most notable bryophyte at Askham Bog is the liverwort *Riccia fluitans*, one of our few free-floating aquatic bryophytes and long-known from the Bog. It was pleasing to confirm its continued presence. A good quantity occurred in the ditch by one of the footbridges on the NE side of Far Wood, and a small amount was also detected in a ditch at the SW side of Near Wood, in both cases with much duckweed. *R. fluitans* is mainly southern and eastern in its UK distribution and is rare in the north of England. There are very few recent records for Yorkshire.

In comparison with previous bryophyte lists from the Bog, the most obvious change has been in the epiphytic flora. Earlier accounts have noted the presence of the acidophile mosses *Dicranoweisia cirrata* and *Dicranum tauricum*. Although these are still present, they have become very rare and were detected on single trees only. The liverwort *Ptilidium pulcherrimum* which formerly occurred has probably gone. This reflects a national trend since the 1990s brought about by reductions in SO_2 pollution. Acidophile epiphytes have declined, while many other species formerly rare or absent are now frequent. Many of the epiphytes that we found had not been reported previously from the Bog. They include *Frullania dilatata*, *Metzgeria violacea*, *Radula complanata*, *Orthotrichum pulchellum*, *O. stramineum*, *O. tenellum*, *Plenogemma phyllantha* (*Ulota phyllantha*), *Pulvigera lyellii* (*Orthotrichum lyellii*) and *Ulota crispula*. Some of these were present in small quantity and, as is the way with epiphytes, they may come and go at individual sites.

We recorded 50 species within the reserve. Undoubtedly this list could be increased in the parts of the Reserve not visited on this occasion.

BOTANY (Sarah White)

Askham Bog is hallowed ground for botanists with a total of 414 plant species having been recorded from this site over the last 200 years. The exceptional richness of the site reflects the acidic, base-rich and transitional habitats of the valley mire system, and while there have been species losses, in particular associated with drying of the site, it nevertheless remains a premier site, both in Yorkshire and in England.

This excursion offered a fabulous opportunity to visit the site in the company of Alastair Fitter, who knows it better than anyone. Sedges are especially well represented at Askham Bog and Alastair led two tours of Far Wood to show members the thriving colony of Elongated Sedge *Carex elongata*, the largest colony in England, which was growing with abundant Marsh Fern and some superb specimens of Royal Fern, the largest plant at least 3m tall. While the flowers and fruits of *C.elongata* were largely over, the distinctive neat tussocks contrasted with the rather untidy-looking ones of Tufted-sedge *C.elata*. We were also shown two other rarities: Fibrous Tussock-sedge *C.appropinquata* and Slender Sedge *C.lasiocarpa*, recently rediscovered by Alastair. For a number of the visiting botanists, these plants were botanical 'lifers'.

Sarah White, Andy MIllard, Alastair Fitter and Paul Simmons in front of one of Askham Bog's very large Royal Fern *Osmunda regalis* plants. *Photo: J. Simmons*

Left: Marsh Fern *Thelypteris palustris. Photo: Sarah White.*
Right: Flowers of Woody Nightshade *Solanum dulcamara* galled by the midge *Contarinia solani*. (See p 229). *Photo: T. Higginbottom*

Since the flora of the site is so well known, we couldn't hope to make many additions in just one day, however we updated the presence of a good number of plants and made a few additions, notably *Rubus plicatus*, known as 'Bog Bramble' because of its preference for boggy habitats, was identified by Don Grant. Several others, including Tawny Sedge *Carex hostiana* and Marsh Speedwell *Veronica scutellata,* have not been recently recorded, so their rediscovery is very welcome.

PLANT GALLS (Tom Higginbottom)

Common Spangle Galls, *Neuroterus quercusbaccarum,* were found on Oak leaves. However, at Askham Bog in 2021, like many other habitats, it has been a year where the silk button gall, *N. numismalis,* has been seen in large numbers. In 2021 the midge gall, *Macrodiplosis pustularis,* which rolls the leaf lobe tip downwards has not been common but was seen here. On a number of leaves of an Oak there were raised pimples of the psyllid gall, *Trioza remota.* The common Alder mite galls, *Eriophyes laevis,* which form pimples all over the leaf surface and *Aceria nalepai,* forming a line of slightly larger pimples down the central vein, were seen frequently. There were common midge galls *Iteomyia capreae* and *I. major* on Sallows.

One of the highlights of the day was Sam Buckton's discovery of some flowers of Woody Nightshade *Solanum dulcamara* affected by the uncommon midge gall, *Contarinia solani* (see photo p.228). Sarah White found an enlarged Bramble twig which had been swollen by the gall wasp *Diastrophus rubi.* Another amazing discovery was the rust *Epichloe baconii* found on an *Agrostis* species grass; it was suggested at the tea & meeting later in the day that this infection gives the grass an unpleasant taste and renders the plant unpalatable to browsing. While walking along the boardwalks the midge galls on leaves of Meadowsweet were common, pustules formed by *Diplolepis pustulans* and the pimples of *D. ulmaria.* Occasionally stems were distorted by the white smut, *Podosphaera filipendulae.* Many tips of pinnules of Broad Buckler Fern *Dryopteris dilatata* had been rolled downwards by the gall fly, *Chirosia betuleti.*

LEPIDOPTERA - Moths (Charles Fletcher)

Left: Spatalistis bifasciana: new for VC64. *Right: Parachronistis albiceps*. *Photos: Charlie Fletcher.*

A grand total of 223 species were identified from the set of traps set up the previous evening, which included 18 new moths for the site, and 12 new for the 10km square. Indeed, Small Purple Button *Spatalistis bifasciana* was new for VC64 (see p229). This was first found in the county in VC61 in 2014. We now have four more records from VC61 and one from VC63, so this is the seventh county record. It is polyphagous on broadleaved trees but has a penchant for oaks.

Black-brindled Bell *Epinotia signatana* was the second record for VC64; it is evidently well established and likely to spread. Food plants are Blackthorn *Prunus spinosa* and Crab Apple *Malus sylvestris*. It is another moth which was first found in the county in VC61 in 2014 but spreading faster than the above. Blackthorn Case-bearer *Coleophora coracipennella* was again the second record for VC64. The food plants are usually Blackthorn or hawthorn, and it is presently uncommon outside VC63.

Viburnum Button *Acleris schalleriana*– although there are two previous VC64 records (Bramham in 1883 and "Harrogate area" in 1965) this is an uncommon moth, and all records since 1965 have been from Potteric Carr or nearby. The larvae feed on Guelder Rose *Viburnum opulis*, and the spinnings I found last year which I suspected were due to this micro are now looking more likely; look for larvae in Aug/Sept and try to breed them through.

The only previous county records of White-streaked Sober *Aproaerema cinctella* are from Wykeham Forest in 1979 and several at Staveley NR a few years ago. Larvae feed on Bird's-foot Trefoil *Lotus corniculatus*. *Parachronistis albiceps* (see p.229) is not new to the site, but five is a good haul for this rare moth which is otherwise just known from the south-east of VC63. A Hazel *Corylus avellana* feeder which might also feed on birches. The Coronet *Craniophora ligustri* record is interesting. We know this population is moving north and west, but this is quite a big westwards jump. The nearest until last year was Elvington but I believe David Laughlin has had it at Askham Bryan this year, so it's on the move.

LEPIDOPTERA – Butterflies (Penny Relf)
It was a hot sunny day and there were plenty of butterflies on the wing.
A total of 17 species were recorded. The commonest species were Gatekeeper and Ringlet. There were dozens of Small Tortoiseshell larvae feeding on Stinging Nettle *Urtica dioica* in the grass verge of the car park with Cinnabar Moth larvae present on their foodplant Common Ragwort *Senecio jacobaea*. Also sighted was a single Painted Lady and two Peacock butterflies which was pleasing as both of these species have been scarce up to now this year.

Members reported both male and female Brimstones on the reserve, and one egg-laying on Alder Buckthorn *Frangula alnus* in the tall fen area of Middle Wood. In addition, a birdwatcher mentioned a perched butterfly in SE5648 that he described with wings closed and the underside as bluish grey with a kinked white line near the edges. This was most likely to have been a Purple Hairstreak.

ODONATA (Africa Gomez)
Seven species were seen, and with the excursion day being one of the hottest summer days so far, there was a lot of activity. The most numerous zygopteran was Azure Damselfly *Coenagrion puella,* which were busy egg-laying on the central pond. There were also Large Red Damselfly *Pyrrhosoma nymphula.*

The most common anisopteran on the day was Brown Hawker *Aeshna grandis*, counts reaching double figures in the heat of the day, with smaller numbers of 4-spot Chasers *Libellula*

quadrimaculata, Common Darter *Sympetrum striolatum* – which were also ovipositing, Southern Hawker *Aeshna cyanea* and Migrant Hawker *Aeshna mixta*.

HYMENOPTERA Apocrita (Aculeata and Parasitica) (Andy Millard)
The damp shady conditions covering a lot of Askham Bog are not ideal for Aculeates and, apart from common bumble bees (*Bombus terrestris*, *B.pascuorum*, *B.lapidarius* and *B.lucorum* agg.) and Honey bees *Apis mellifera*, the only other aculeate recorded was the relatively widespread Ruby-tailed wasp, *Chrysis impressa* (which probably parasitises wasps of the genus *Ancistrocerus*), although it has not been recorded previously at Askham Bog and is therefore a new species for this site.

Two Parasitica were recorded (identified by Bill Ely), both new to Askham Bog: the ichneumon *Isadelphus inimicus* (Gravenhorst, 1829), a possible parasite of moth caterpillars in the canopy and the braconid *Diospilus intermedius* (Förster, 1878), which parasitises the wood-boring larvae of longhorn beetles.

SYMPHYTA (Ian Andrews)
The excursion day was something of an in-between time, with most sawfly adults finished for the year and many larvae yet to develop, so just two adults were taken: *Rhogogaster scalaris* on Alder, and *Birka cinereipes* from general sweeping in low vegetation within open fen. Larvae of *Arge pagana* were found in a few places around the boardwalk on rose sp. The distinctive double rows within their oviposition scars differentiate them from the very similar *Arge ochropus*, which is less common, but increasing in Yorkshire. Most of the roses also had leaf rolls of the larvae of the small, black sawfly *Blennocampa phyllocolpa*. The larvae of *Rhadinoceraea micans* were abundant in some areas, munching their way through the leaves of Yellow Iris *Iris pseudocorus*. Most pleasing was to see how many larvae of *Monostegia abdominalis* there were on Yellow Loosestrife *Lysimachia vulgaris*. This species is only recorded from 3 Yorkshire sites, and was last recorded at Askham in 1996, but it looks to be abundant there at present.

DIPTERA, HEMIPTERA AND COLEOPTERA (Andrew Grayson)
As might be expected, Diptera were the most numerous invertebrate order; albeit, many dipterans (and dipterists!) sought shade from the prevailing swelteringly oppressive sunny conditions. Three prominent dipterists (the writer, Roy Crossley and Ian Andrews) were in attendance but their combined fieldwork totalled little over four hours; hence, it was somewhat remarkable that the meeting produced six vice-county additions.

The writer's attendance was particularly brief yet produced a female of the sweat fly *Hydrotaea meteorica* and a male of the fungus gnat *Orfelia nigricornis*, both being new to VC64; plus the following scarcely-recorded Yorkshire flies: *Hydrophoria linogrisea* (first county record for forty years); *Lasiomma strigilatum* (the only other VC64 records are from the Malham Tarn estate) and *Diaphorus oculatus* (only known from seven Yorkshire sites: first discovered in 1919 by Chris Cheetham at Austwick Moss and Lawkland Moss). Roy Crossley (pers. comm.) considers that, at the present time, Askham Bog is its main base in the county. It has been found here on numerous occasions since being first discovered by Roy in 1985. The writer's findings also included the nationally Local Dolichopodidae flies *Argyra perplexa* and *Scellus notatus*.

Ian Andrews mainly worked around Marsh Thistle *Cirsium palustre* and woodland edge Alder *Alnus glutinosa*. His list included the robberfly *Dioctria baumhaueri* and the marshland hoverflies *Platycheirus rosarum* and *Tropidia scita* but, more importantly, Ian made the

following additions to the VC64 list: a male *Rivellia syngenesiae*, a male *Cryptonevra flavitarsis*, and a female *Megaphthalma pallida*. Technically, the common flesh fly *Sarcophaga carnaria* (single males taken by Ian Andrews and the writer) was also a vice-county addition as these were the first *S. carnaria* sensu stricto records for VC64. Although not taken on the day of the meeting it is pertinent to mention that a further addition to the VC64 list was made when Roy Crossley visited Askham Bog on 1 June 2021 and found a female of the uncommon dance fly *Empis nigritarsis* (only the fifth county record): this was swept by Roy from the side of the dyke at the entrance.

Hemiptera from the previous night's light-trapping which Sharon and Peter Flint identified included the shieldbug *Pentatoma rufipes*, and the water-boatmen *Callicorixa praeusta*, *Hesperocorixa sahlbergi*, *Sigara falleni*, *S. concinna* and *S. semistriata*.

Coleoptera were likewise little recorded, finding only common and easily recognisable beetles. The now fairly-commonplace Alder Leaf Beetle *Agelastica alni* was recorded.

FRESHWATER ECOLOGY (Peter Flint & Sharon Flint)
The bycatch from the huge moth-trapping effort by Charlie Fletcher and his team over the previous night was examined while the traps were emptied early next morning on 17thJuly; the freshwater invertebrate species caught included 19 Caddis, 1 Mayfly, 1 Lacewing, 6 bugs and 6 beetles.

All 19 species of Caddis recorded from the light traps are widespread and common in Britain. One of the most common caddis was *Limnephilus lunatus*, with a 'lunar' shaped dark mark at the end of the forewing, which inhabits small streams, ponds, lakes, ditches, and marshes. Another common species, *Glyphotaelius pellucidus*, (the Mottled Sedge) has characteristic strongly indented wing-end margins. This species inhabits temporary streams and pools, often in woodland; juveniles were observed in a ditch on the bog, so they were definitely breeding on this site. *Trigostegia minor* is more than likely to be breeding in the pool by the boardwalk as an adult was swept from vegetation here in addition to being recorded in the light traps. Another species recorded from the traps was *Limnephilus flavicornis*, and it is possible that juveniles of this species will be also be found here. Two very small Hydroptilidae micro-caddis (< 5mm,) were *Agraylea multipunctata* and *Orthotrichia costalis*.

The light traps were also catching running water species, e.g., *Hydropsyche pellucidula* (Grey Flags, or Marbled Sedges), which may be coming from nearby large rivers and small streams. To be sure of which caddis are actually breeding on site juveniles would have to be recorded from the various habitats of the bog over a whole year.

ARACHNIDS (Richard Wilson)
Askham Bog was thoroughly surveyed between the early 1960s and early 1980s by Clifford Smith. A hiatus of almost 20 years elapsed before a flurry of records in May 1999 from Alan Scott (see Oxford and Scott, 2003), the 2003 survey (*ibid*.) and a few additional records in the autumn of 2007 and 2008. This resulted in a total of 183 species for the reserve to the end of 2008.

A brief foray was undertaken in the morning and, so far as the recorder is aware, this produced the first spider records from the reserve since 2008. 15 species were found, all common taxa nationally, but included the wolf-spider *Pardosa prativaga,* first recorded in 2003.

BIRDS (Sarah White)
July is a rather late time of year for recording birds, but there were still a few singing including Blackbird, Reed Warbler, Blackcap, Song Thrush, Wren and Reed Bunting. Others were Moorhen, Pheasant, Great Spotted Woodpecker, Woodpigeon, Robin, Blue Tit, Chiffchaff and Bullfinch. Alastair Fitter reported that there were probably three active Buzzard nests on site this year, and earlier in the year there were reports of singing Grasshopper Warblers.

It is interesting and sad to note that the YNU excursion in 1963, also a July visit, had a total of 41 birds, almost three times our total, and including Willow Tit, Tree Pipit, Corn Bunting, Tree Sparrow, Turtle Doves and Nightingale, none of which were recorded this time. On the other hand, they did not record any raptors or game birds, and while they had six species of warbler, this did not include Reed Warbler.

OTHER VERTEBRATES (Ken White)
Despite the huge human (and dog) footfall the reserve experiences on a daily basis, Roe Deer were seen wandering around the reserve and several Common Frogs were seen in the vicinity of the pools.

Typical Askham Bog habitat. *Photo: Andy Grayson*

DISCUSSION & CONSERVATION (Alastair Fitter)
I am hugely grateful to the YNU members who spent the day (and in some cases the night as well) at Askham Bog for the 2021 VC64 excursion. The Planning Inquiry into the proposed housing development next to the Bog in 2019 emphasised to us how important it is to know what is on any threatened site and, of course, that knowledge also helps with creating conservation plans. The original SSSI citation lists surprisingly few of the most significant species at Askham and quite a few of them may no longer be present, such as the beetle *Agabus undulatus* and Adder's-tongue fern *Ophioglossum vulgatum*. The only lepidopteran mentioned is Fen square-spot *Diarsia florida* and that had not been recorded since 1970; it is a relief that it was one of

the moths caught on the excursion, even though it is no longer as scarce as once thought.

The excursion revealed many new records for the site, which are detailed in the reports. There were new site records in almost all the groups that were examined on the day, most notably in the Bryophytes where 14 species were added to the site list. In several groups the new site records were also vice-county records, including six Diptera and one moth. The Diptera records are especially remarkable given that a number of eminent Yorkshire dipterists have studied the site and that the list is already over 400 strong. Some groups have barely been studied at Askham: there are only single records of for example centipedes, scorpionflies and opilionids.

Groups that were examined in detail such as bryophytes and moths (18 new species) turned up numerous new site records but other groups also hint at considerable richness to be uncovered. The Trichoptera list for example, as published in Fitter and Smith (1979), previously comprised 15 species with an additional 8 that had not been recorded since 1920 and had mainly been associated with the brick ponds on Chaloner's Whin, adjacent to the Bog, that were filled in nearly 100 years ago. Examining the bycatch in the moth traps revealed a list of 19 caddis, all widespread, but only 4 of which appear to feature on the 1979 list. Indeed, one caddis recorded this year, *Limnephilus flavicornis,* was in the list of 'lost' species from Chaloner's (or Chandler's) Whin, last recorded in 1889. Similarly, two dragonflies (Brown Hawker and Four-spot Chaser) that were abundant on the day are perhaps recent re-colonists: in the 1979 list the comment made was that they "were recorded towards the end of the 19th century, but almost certainly no longer exist at the Bog". It is very hard to know whether species that are recorded after a very long gap have just been overlooked or have re-colonised after local extinction; in an analysis of moth trap data from Askham Bog, we tried to address this question (Fitter *et al.*, 2021).

There are many other important records in the reports above, highlighted by the recorders and others not listed: for example 3 of the 6 water beetles and again 3 of the 6 Hemiptera noted on the day are new site records. What this shows is that, even though Askham Bog is, for its size, already the richest site in Yorkshire for numbers of species, there is much still to be found. My hope is that this account will whet the appetites of other naturalists who will visit and add to our knowledge of this remarkable place – and of course that there will be return visits by some of the band of experts who made this excursion such a success.

Our many thanks to the YWT for agreeing to have the YNU Excursion at Askham Bog and to the Pike Hills Golf Club for hosting our afternoon tea and meeting at their clubhouse.

References

Fitter, A. & Smith, C. (1979) *A Wood in Ascam: A Study in Wetland Conservation*. York, William Sessions Ltd., The Ebor Press, in association with YNU.

Fitter A.H., Baker, R.H.A, Crawford, T.J. & Fletcher, C.H. (2021) The moth fauna of Askham Bog. *The Naturalist* 146: 114-126.

Oxford, G.S. & Scott, A.G. (2003) The spider fauna of Askham Bog, York, and the assessment of conservation value. *The Naturalist* 128: 157-169.

Other linked articles:

CABI Himalayan Balsam control:
https://www.cabi.org/projects/biological-control-of-himalayan-balsam/

SSSI citation:
https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000196.pdf

YNU: Report of Excursion 2nd June 1879. *The Naturalist* 4: 191-2.
https://www.biodiversitylibrary.org/item/173411#page/259/mode/1up
YNU: Report of Excursion 4th June 1900. *The Naturalist* 25: 190.
https://www.biodiversitylibrary.org/item/174173#page/658/mode/1up
YNU: Report of Excursion 30th July-1st August 1921. *The Naturalist* 46: 347-351.
https://www.biodiversitylibrary.org/item/198014#page/395/mode/1up
YNU: Report of Excursion July 20th-21st 1963. *The Naturalist* 88: 141-143
https://www.biodiversitylibrary.org/item/213140#page/77/mode/1up
Yorkshire Wildlife Trust website:
https://www.ywt.org.uk/nature-reserves/askham-bog-nature-reserve
Link for Public Inquiry documents including Alastair Fitter's Proof of Evidence
https://www.ywt.org.uk/saveaskhambog

Howgill Fells, Cautley Holme Beck (VC65) 13-14 August 2021

INTRODUCTION (Terry Whitaker)
As is often the case in late August in the northwest of Yorkshire, the mainly dry summer weather had deteriorated. Rain and wind arrived the previous week and showers and a strong cool wind was forecast. However, in the event, the wind dropped to a strong breeze and the area was mainly sunny during the field meeting. A surprisingly large number of people attended and most stayed for the reporting meeting at the Cross Keys Inn where there was tea and good home-made cakes.

The reporting meeting was chaired by the YNU President, Judith Allinson, assisted by Terry Whitaker. 20 people from 10 affiliated societies shared their observations - it was especially good to see a strong contingent from the Darlington & Teesdale area.

Unfortunately few taxon specialists were able to visit and some of the more elderly members were also unable to access the richer but more precipitous parts of the terrain (the Gorge and the Cautley Spout cascades). Despite the difficulties, Tom Blockeel diligently worked his way up the Cautley Beck to the base of the largest Cautley Spout waterfall, recording Bryophytes. The higher plants and birds were widely observed and reported on, but many groups were not covered.

BRYOPHYTES (Tom Blockeel)
Cautley Spout and its environment encompass a huge area that cannot adequately be covered bryologically in a single day. Three habitats are of special interest: the humid ravine at the Spout, the massive east-facing crags adjoining the Spout and the flushes and mires on the slopes below. On this occasion most of the recording was concentrated in the ravine at the Spout, which is an outlying locality for a number of bryophytes with a strongly Atlantic distribution. These include the liverworts *Saccogyna viticulosa*, *Plagiochila spinulosa*, *Frullania fragilifolia* and *Lejeunea patens*. A few previously-recorded species could not be re-found, although the area above the main waterfall was not visited. On the other hand, some new records were made, notably the mosses *Ditrichum lineare* and *Polytrichum perigoniale* on an open bank by the ravine and *Grimmia hartmanii* on a streamside boulder. The *Ditrichum* is new to Yorkshire, and the *Polytrichum* new for the vice-county.

Cautley Spout (top) and Gorge. *Photo: Terry Whitaker*

Among the many other species present in the ravine were *Blepharostoma trichophyllum*, *Cololejeunea calcarea* (very sparsely), *Porella arboris-vitae*, *Bryum julaceum* (=*Anomobryum julaceum*), *Campylopus atrovirens*, *Diphyscium foliosum*, *Fissidens osmundoides*, *Pohlia cruda* and *Rhabdoweisia crispata*.

There was time for only a brief examination of the crags and hillside flushes. Many of the bryophytes found at the Spout were also present on the crags, but additions included *Andreaea hookeri* (=*A. alpina*) and *Amphidium lapponicum*, both of these being montane mosses that are very rare in Yorkshire. *Blindiadelphus recurvatus* (=*Seligeria recurvata*) was noted in the scree below. Flushes and rivulets produced *Jungermannia eucordifolia*, *Breutelia chrysocoma*, *Palustriella falcata*, *Scorpidium cossonii*, *Sphagnum contortum* and *Thuidium delicatulum*. Notable in a flush near the Spout was *Sphagnum angustifolium*, a re-discovery of the only previous vice-county record, made in this area in 1969.

Cautley is one of the richest bryological localities in Yorkshire, and the list for day totalled 127 species. Even so, it is substantially incomplete.

PTERIDOPHYTES (Darlington & Teesdale N.F.C.)
Bracken *Pteridium aquilinum* was dominant on large parts of the middle slopes of the hillsides. However, in the gorge ferns were fairly abundant. On the walls Male-fern *Dryopteris filix-mas*, Parsley Fern *Cryptogramma crispa*, Maiden-hair Spleenwort *Asplenium trichomanes*, Hart's tongue *Asplenium scolopendrium* and Common Polypody *Polypodium vulgare* were very common, and under overhangs and shaded places was Wilson's Filmy-fern *Hymenophyllum wilsonii*. As a result of the dry summer large parts of some of the more exposed clumps of the fern were completely blackened and possibly moribund.

FLOWERING PLANTS (Mary Atkinson & Darlington & Teesdale N.F.C.)
The ground is stony and much of it is slightly alkaline due to the lime derived from the volcanic ash beds higher up, and it supports plants such as small Geraniums. Other parts of the ground, particularly near the beck, are more acidic. Unfortunately there was no-one at the meeting who was both botanically competent and also physically capable to look out for the rare plants flagged up by Don Gamble as being in the gorge. These were Serrated Wintergreen *Orthilia secunda*, *Hieracium prenanthoides* and *H. rubicundiforme* (both members of the rather difficult Hawkweed group). The DTNFC produced a short plant list of common higher plants.

Alpine Lady's-mantle *Alchemila alpina* (below) and the rather local Pale Forget-me-not *Mysotis stolonifera* were re-found near the stream at the bottom of the gorge and large clumps of the beautiful Starry Saxifrage *Saxifraga stellaris* were noted actually in the water of the stream and also in some of the higher mossy flushes, in company with Round-leaved Sundew *Drosera rotundifolia.* Orpine *Hylotelephium telephium,* a native but rather local species was also found (below).

Left: Alpine Lady's-mantle *Alchemila alpina*. Right: Orpine *Hylotelephium telephium*

Photos: Terry Whitaker

LEPIDOPTERA (Terry Whitaker & David Fisher)
The YNU Lepidoptera Group was invited to trap on the Friday night and two M/V Robinson traps and two Actinic Heath traps were set up in four places in different habitats. The trapping covered the three 1K squares (SD6997; SD6996 & SD6897). Although the strong winds moder-

ated overnight and it was cloudy, the only trap with many moths was a Robinson placed in a relatively sheltered area above the river near the footbridge in SD6896.

From the trapping and daytime observations 27 species of moths (217 individuals) were recorded. Ten of those were new for the sparsely recorded 10K square SD69, which now contains about 161 spp. including 36 micro-moths, SD6996 29 spp. (up from 3 spp.]; SD6897 4 spp. (up from 1); SD6997 5 spp. (up from zero); SD6896 8 spp. (no change). However there are still only 34 spp. of moths (12 micro and 22 macro.) recorded from the four 1km grid squares nearest to Cautley Holme Beck.

The most common species recorded were Antler Moth *Cerapteryx graminis,* typical of upland habitats dominated by Mat-grass, and Bird Cherry Ermine *Yponomeuta evonymella* from the riverside trees close to a trap. Notable species amongst the macrolepidoptera were mostly those which are typical of boggy upland sites, such as Haworth's Minor *Celaena haworthii* and Oblique Carpet *Orthonama vittata*. The single ear-moth proved to be Crinan Ear *Amphipoea crinanensis*, common on the higher ground of the far northwest.

The bright sunshine encouraged butterfly spotting and eight species were recorded; the most common being the second brood of Green-veined White, which were widely observed mating in the long vegetation near the river.

COLEOPTERA (Peter Flint)
One specimen of the large Ground Beetle *Carabus problematicus* was taken in a light trap set overnight by the side of Cautley Beck. This beetle is flightless so must have actually climbed into the trap. Other beetles in the light traps were the Dor Beetle *Geotrupes stercorosus* and the black and orange Sexton Beetle *Nicrophorus investigator*. The metallic blue Dor Beetles were also seen in many places, roaming around in the sunshine doing their job of eating dung.

HYMENOPTERA Aculeata: Solitary Wasps, Bees & Ants (Andy Millard)
Recording was focused within about 200m of the River Rawthey and Cautley Holme Beck. Amongst the social aculeates four common bumblebees: Small Garden Bumblebee *Bombus hortorum*, Red-tailed Bumblebee *B. Lapidarius*, White-tailed Bumblebee *B. lucorum* agg. and Common Carder Bee *B. pascuorum* were observed foraging and a single German Wasp *Vespula germanica* was caught in the moth trap. Two solitary bees were recorded, the Common Mini-miner *Andrena minutula*, the first record for VC65, foraging on Tormentil *Potentilla erecta*, and Smooth-faced Furrow Bee *Lasioglossum fratellum* (7th record for the VC) foraging on a yellow composite.

HYMENOPTERA Parasitica
All parasitic hymenoptera from the light traps were forwarded to Bill Ely for identification. Two Ichneumons were recorded: *Clistopyga incitator*, which parasitises spider egg cocoons, and *Ichneumon oblongus*, the latter being only the second record for VC65.

FRESHWATER ECOLOGY (Sharon & Peter Flint & others)
The day started early with collecting the adult caddisflies and mayflies from the various light traps that the lepidopterists had run during the previous night. A single specimen of *Leuctra fusca* was the only stonefly taken in the traps but there were several specimens, both male and female, of the mayfly *Ecdyonurus dispar.*

Caddisflies found during the day included the black-and-yellow-speckled *Philopotamus montanus* and the much larger *Potamophylax cingulatus,* whose brown wings have several prominent pale spots including an 'hour-glass'-shaped mark in the middle of the forewings, together with *Limnephilus sparsus, Lepidostoma hirtum, Rhyacophila dorsalis, Glossosoma boltoni* and *Hydropsyche siltalai*.

Searching the stony streams of Cautley Holme Beck and its tributaries coming down from Cautley Crag we found juveniles of the large stonefly *Dinocras cephalotes* together with adults of five other, smaller species, *Leuctra fusca*, *L. hippopus*, *L. inermis*, *Nemourella picteti* and *Isoperla grammatica*. As the sun came out and the temperature rose after lunch these all started flying, as did the mayflies *Ecdyonurus dispar* and the rather smaller *Seratella ignita*. Caddis larvae from these streams included *Chaetopteryx villosa*, *Drusus annulatus*, *Glossosoma boltoni*, *Philopotamus montanus*, *Plectrocnemia geniculata* and *Silo pallipes*. The river limpet *Ancylus fluviatilis* was widely present in the fast-flowing Holme Beck. Odonata reported along Holme Beck included the Common Hawker *Aeshna juncea* and some specimens of the spectacular Golden-ringed Dragonfly *Cordulegaster boltonii;* including a female dropping its eggs into the Beck.

GENERAL ENTOMOLOGY (Terry Whitaker)
There were also several Common Earwigs *Forficula auricularia* in the light traps and some common insects also attracted attention. These included the shining blue-geen *Cicadella viridi*s, which was abundant in the clumps of *Juncus* in the short grassland and the Common Green Grasshopper *Omocestus viridulus* was plentiful.

BIRDS (John Turner & Darlington & Teesdale N.F.C.)
21 species were recorded on a pleasant, sunny day with fine weather clouds and a moderate breeze. The commonest bird away from the buildings was the Meadow Pipit but the highlight for many people was watching a family of Peregrines around the Cautley crags.
In SD6896 were Sparrowhawk; Peregrine (carrying prey); Kestrel; Whinchat; Wheatear; Meadow Pipit; Willow Warbler/Chiffchaff (juvenile); Grey Heron (in flight). In SD 6997 were 4 Ravens, probably a family group, mobbing a Buzzard.

COMMENTS ON CONSERVATION (Elizabeth Elliott)
The hillsides between the pub and Cautley Spout are particularly bare with only a few trees by the river. Presumably there were trees in ancient times which man used as firewood and to build dwellings but in more recent times the land has been over-grazed. This means the wildflowers struggle and have particularly short stems. We found very short specimens of Lesser Spearwort *Ranunculus flammula*.

The group speculated whether the short turf was a result of persistent, too intensive grazing or just a seasonal effect caused by the dry weather, but the general wear and the very short turf on the steep slopes and paths approaching the waterfalls was very apparent.

ACKNOWLEDGEMENTS & THANKS
Thanks were given to the organiser Terry Whitaker and to Messrs Stephenson of Low Haygarth and the common graziers of the land for allowing access and also to the Cross Keys Inn for providing the refreshments.

Pip Seccombe (1939-2021)

I am sad to inform you of the death of YNU Member Pip Seccombe. Since the 1970s she had been a very active member of the Doncaster Naturalists' Society, for two periods serving as its President, for a long period was its recorder and in 2020, in recognition of her work for the society and in support of local wildlife sites, was made Honorary Life Member.

She was a significant contributor of records for the YNU South Yorkshire Plant Atlas and attended YNU History Section meetings.

Colin Howes

YNU Calendar 2022

For further details and updates visit the YNU Events Calendar website (https://www.ynu.org.uk/news-events/events).

Mar	13	Lepidoptera Group Annual Meeting: Bramham Village Hall. Time tbc.
	19	Entomological Section. Recorders' Reports and Conversazione: Wilberfoss Community Centre 10:30 – 16:00.
May	7	Bryological Section, Uldale VC65. Meet at 10:00 in the lay-by on the A683 just west of Rawthey Bridge, grid ref. SD71209789. Contact: Tom Blockeel (see Card p7).
	7	Botanical Section. Barnburgh, VC63 - Calcareous springs and fens. Meet outside Barnburgh Church. SE484032 at 10.30 (on-street parking). Contact: Louise Hill (see Card p7).
	21	**VC65 Excursion to Jervaux Abbey Estate.**
June	25	**VC61 Excursion to Leven Canal & Leven Carrs**. Sands Lane TA101450.
July	2	Botanical Section. Castleford & New Fryston, VC63. Meet 10:30 near Play Area off Wheldon Road. SE454629. Contact Kay McDowell (see Card p7).
	9	**VC62 Excursion to Strensall Common**. Car park at SE648611.
	23	**VC63 Excursion to Brockadale**. Car park at SE512173.
Aug	14	**VC64 Excursion to Humberstone Bank Farm**. Car park at SE133606.
Oct	8	Bryological Section, Ogden Clough and Ovenden Moor, VC 63. Meet at 10:00 in the public car park at Ogden Reservoir, SE06593093. Contact: Tom Blockeel (see Card p.7).

Yorkshire Naturalists' Union

c/o NEYEDC, 10a Minster Gates, York YO1 7HL
Tel: 01904 641631 Email: membership@ynu.org.uk
Website: www.ynu.org.uk
Registered Charity No. 224018

The Naturalist

This publication is issued free to individual members of the Yorkshire Naturalists' Union and to Affiliated Societies. The Editorial Board of *The Naturalist* is currently:

W. Ely, A. Millard, P. Simmons, D. Smith

Assistant Proofreader: **S. Millard**

Notice to contributors

Contributors should indicate whether they wish their manuscripts to be subjected to anonymous peer review. All other manuscripts will be reviewed by the Editorial Board who at their discretion may send them to third parties for comment and advice.

Original articles should be submitted electronically as an MS Word document to Dr A. Millard at:
editor@ynu.org.uk

Please look at a recent issue of the journal for a general idea of how to present your article. Also see *The Naturalist - Guidance for authors* at www.ynu.org.uk/naturalist and please **avoid** the following:

- using any paragraph formatting and line spacings other than single.
- using tabs to tabulate information (please use MS Word table format).
- inserting any figures, graphs or plates into the text; indicate their proposed locations in the text and send them as separate files.

Good quality, high resolution images are very welcome and should be sent as .jpg files, with a separate MS Word file containing the caption and name of the person to whom the image should be attributed.

If electronic submission is not possible, contributions should be sent to Dr. A. Millard, Woodland Villas, 86 Bachelor Lane, Horsforth, Leeds LS18 5NF (Tel. 0113 258 2482).

Contributors should ensure the accuracy of reference citations. The Editorial Board and Council accept no responsibility for opinions expressed by contributors.

Copy Dates:
April issue - 14 February; August issue - 14 June; December issue - 14 October

© Yorkshire Naturalists' Union 2021. Single copies may be made of single articles in this journal provided that due acknowledgement is made and the copies are for non-profit making educational or private use. Copying of more than one article or multiple copying of a single article is forbidden unless special permission has been obtained from the Yorkshire Naturalists' Union. Articles submitted for publication in *The Naturalist* may not be submitted to another journal for publication. Permission is granted for the use of brief quotations in published work provided that acknowledgement of the source is clearly stated but the use of substantial sections of text and any illustrative matter requires the express permission of the Yorkshire Naturalists' Union.

***The Naturalist* is printed by Swallowtail Print, Norwich**

ISSN 0028-0771

Yorkshire Naturalists' Union